Number 9 Series 1925

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF CHEMISTRY AND SOILS
In Cooperation with the North Carolina Department of Agriculture
and the North Carolina Agricultural Experiment Station

SOIL SURVEY
OF
NORTHAMPTON COUNTY
NORTH CAROLINA

BY

W. D. LEE, U. S. Department of Agriculture, in Charge
and S. F. DAVIDSON, North Carolina Department of Agriculture
and North Carolina Agricultural Experiment Station

Beginning with the 1923 Series, Soil Survey Reports will be issued separately. These reports of the individual areas will be sent to libraries as soon as they are available and should be filed, preserved, and ultimately bound to take the place of the bound volumes of the Field Operations which have previously been supplied by the department. The reports for each year will be consecutively numbered, the last report for a particular year bearing the conspicuous notice: "This number is the final and last Soil Survey Report for the Year 192–."

BUREAU OF CHEMISTRY AND SOILS

HENRY G. KNIGHT, *Chief*
A. G. McCALL, *Chief, Soil Investigations*
SYDNEY D. FRISSELL, *Editor in Chief*

SOIL SURVEY
CURTIS F. MARBUT, *in Charge*
W. E. HEARN, *Inspector, District 2*

COOPERATION
NORTH CAROLINA DEPARTMENT OF AGRICULTURE
W. A. GRAHAM, *Commissioner*
NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION
R. Y. WINTERS, *Director*
C. B. WILLIAMS, *in Charge of Soil Survey*

CONTENTS

SOIL SURVEY OF NORTHAMPTON COUNTY, NORTH CAROLINA

By W. D. LEE, U. S. Department of Agriculture, in Charge, and S. F. DAVIDSON, North Carolina Department of Agriculture and North Carolina Agricultural Experiment Station

COUNTY SURVEYED

Northampton County is in the northeastern part of North Carolina, along the Virginia State line. Roanoke River forms the south and southwest boundary. The county is very irregular in outline. It has an area of 541 square miles or 346,240 acres.

Northampton County lies almost wholly within the coastal plain region, but the extreme northwestern part extends into the piedmont plateau. The relief of the piedmont plateau region is generally decidedly rolling or hilly. In the coastal plain there are two rather distinct physiographic divisions. To the north of a line roughly following the State highway from Weldon to Jackson and passing through Lasker, Potecasi, and Hebron Church, the relief is mainly rolling and there are only small intervening flat areas. To the south of this line the land is prevailingly flat or very gently rolling, the more rolling areas occurring along the stream courses.

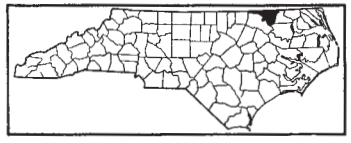


FIGURE 1.—Sketch map showing location of Northampton County, N. C.

Many of the streams have cut valleys ranging from 40 to 80 feet in depth. The deepest valleys are those of Meherrin and Roanoke Rivers and their tributaries. In the northern part of the county they are all rather deep and somewhat narrow, and the streams have swift currents. Throughout the southern part of the county the valleys are broader and flatter, and the streams are more sluggish.

Terraces are extensive along Roanoke River and, in places, along Meherrin River, and narrow strips of terrace occur on some of the larger creeks. The terrace along Roanoke River varies in width from a few yards to more than 4 miles and extends from above the abandoned Roanoke Railway to the extreme southern tip of the county. Its greatest development occurs in Occoneechee Neck, where it consists of a series of three generally flat strips rising step-like from the river, with depressions running more or less parallel to the river. In places the line of demarcation between the terrace and the upland is indistinct, the terrace merging gradually into the upland, with a scarcely noticeable rise. The terraces along Meherrin River, as a rule, are separated from the general upland level by sharp bluffs from 50 to 80 feet high. These terraces are not so extensive as

31038—29——1

those along Roanoke River. Numerous depressions and low ridges break their uniformity. The strips of terrace occurring along some of the larger creeks are generally narrow and inextensive.

There is considerable difference in elevation in various parts of the county. The highest point, at St. Lukes Church in the northwestern part, has an elevation of 350 feet above sea level. The lowest points are where Roanoke and Meherrin Rivers leave the county, Meherrin River being less than 10 feet above sea level where it enters Hertford County. The elevation of Vultare is 326 feet above sea level, that of Pleasant Hill is 117 feet, of Margaretsville 56 feet, of Severn 59 feet, of Garysburg 80 feet, and of Eagletown 66 feet. The prevailing slope of the county is toward the east and south.

Northampton County is drained by Meherrin and Roanoke Rivers and their tributaries. The greater part of the drainage enters Meherrin River. Drainage eastward into Meherrin River is largely carried by Beaverpond, Cypress, Kirbys, and Potecasi Creeks, and by Jacks Swamp. Drainage southward into Roanoke River is carried by Deep Creek, Occoneechee Creek, Gumberry Swamp, Sandy Run, and numerous smaller streams. Drainage in the southern part of the county is not so well established as in the northern and western parts. The largest of the poorly drained areas occur southeast of Jackson, south of Woodland, and north and south of Rich Square. The largest poorly drained terrace area is east of Roanoke Chapel. The first bottoms along Roanoke River are overflowed during periods of very high water; those along Meherrin River are covered with only a slight rise above normal.

Both Roanoke and Meherrin Rivers are swift-flowing streams. Near Roanoke Rapids considerable water power has been developed. Below Occoneechee Neck, Roanoke River has apparently cut down nearly to base level, and the current is considerable slower. This also is true of Meherrin River below Boykins Bridge. A few gristmills are operated on the smaller streams.

Northampton County was formed from Bertie County in 1741, and Jackson, the county seat, was established in 1742. The early settlers were principally Scotch and Scotch-Irish from the British Isles. English settlers came in later from Virginia, and from the older colonial provinces to the north came French, English, Scotch, and Scotch-Irish settlers. The early settlers made their way up Roanoke River and established their homes in the southern and southwestern parts of the county. The settlers from Virginia and the northern provinces made their homes largely in that part of the county lying to the west of the present village of Margaretsville. The present white population consists mainly of descendants of the early settlers and of persons who have moved in from adjoining counties. More than half the present population consists of negroes.

The population of Northampton County, according to the 1920 census, is 23,184, all of which is classed as rural. The average is 46 persons to the square mile. The population is fairly evenly distributed throughout the county, no very extensive areas being unsettled. The largest unsettled areas are the first-bottom lands along Roanoke and Meherrin Rivers and the poorly drained areas southeast and north of Rich Square, south of Woodland, and southeast of Jackson. Settlement is comparatively dense around all the towns and villages.

The largest towns and their population, as reported in the 1920 census, are as follows: Jackson, the county seat, 579; Woodland, 400; Rich Square, 475; Conway, 294; Severn, 284; and Seaboard, 280. These towns are the local trading centers for important agricultural sections.

Northampton County is very well served with railroad facilities. The main line of the Atlantic Coast Line Railroad, the Seaboard Air Line Railway, and the Carolina & Northeastern Railroad, a freight line, reach most parts of the county.

Public county roads extend to practically all sections of the county. They are generally good throughout the year, except in midwinter, when they become almost impassable after much wet weather, especially in the southern half of the county. The main routes of travel are the State highways, which are of sand, clay, and tarvia or concrete construction and which are kept in an excellent condition. The principal highway crosses almost through the center of the county, passing through Jackson and Conway; another serves the southern part, passing from Jackson through Rich Square and Eagletown; and a third connects Rich Square with Halifax County to the southwest. The extreme western part of the county is crossed by a highway from Roanoke Rapids to the Virginia State line.

Telephone service is fair throughout the county, and rural mail routes reach practically all sections. The public-school system is fair. Good high schools are in the larger towns, and Woodland and Rich Square have accredited State high schools.

The principal cotton market is Norfolk. Peanuts are generally sold to local buyers, who ship to Suffolk. Produce is sold in the larger towns of the county. Surplus poultry and eggs are shipped to Norfolk.

CLIMATE

The climate of Northampton County favors the production of a wide range of general farm crops and late truck crops. The summers are long but not excessively hot, and the winters are short and comparatively mild. According to the data of the Weather Bureau station at Eagletown, in the southeastern part of the county, the extreme range in temperature is 104° F., from −4° to 100°. The date of the latest killing frost recorded is May 11, and that of the earliest is October 9. The average date of the last killing frost is April 13 and of the first October 26. This gives a normal frost-free season of 196 days, which is sufficient to bring to maturity all the farm crops commonly grown. The ground freezes to only a slight depth, but the periods of freezing weather are sufficiently frequent to have a beneficial effect on fall-plowed land.

The average annual rainfall of 48.62 inches is ample for the production of all common crops. The precipitation is heaviest during the summer and lightest during the fall, or harvesting season. Crops rarely suffer from drought, but occasionally in summer excessive precipitation results in lower crop yields, particularly on the soils which naturally are poorly drained. Snow falls occasionally from November to early April. The average annual fall is 9.5 inches, but snows are generally light and remain on the ground only a few days.

Table 1 gives the more important climatic data recorded at the Weather Bureau station at Eagletown.

TABLE 1.—*Normal monthly, seasonal, and annual temperature and precipitation at Eagletown*

[Elevation, 66 feet]

Month	Temperature			Precipitation			
	Mean	Absolute maximum	Absolute minimum	Mean	Total amount for the driest year (1921)	Total amount for the wettest year (1917)	Snow, average depth
	° F.	° F.	° F.	Inches	Inches	Inches	Inches
December	41.3	75	−1	3.83	3.63	2.81	3.1
January	42.2	79	−4	3.49	3.38	4.31	2.0
February	41.8	77	0	3.78	2.70	3.22	2.2
Winter	41.8	79	−4	11.10	9.71	10.34	7.3
March	50.2	93	15	3.87	3.15	4.88	1.6
April	58.2	92	29	3.59	4.66	4.06	.3
May	67.6	95	35	3.90	5.84	3.31	0
Spring	58.7	95	15	11.36	13.65	12.25	1.9
June	73.5	100	48	6.09	1.42	7.33	0
July	77.4	100	50	6.72	3.10	10.11	0
August	76.8	98	53	5.47	2.06	6.23	0
Summer	75.9	100	48	18.28	6.58	23.67	0
September	71.3	98	41	3.27	4.52	9.14	0
October	61.6	92	27	2.60	.85	4.20	Trace.
November	49.6	83	19	2.01	3.03	.64	.3
Fall	60.8	98	19	7.88	8.40	13.98	.3
Year	59.3	100	−4	48.62	38.34	60.24	9.5

AGRICULTURE

Agriculture has been the principal industry of Northampton County since its settlement more than 200 years ago. The first settlements were made near Roanoke River and along the larger streams in the southern part of the county. The early settlers produced corn, wheat, potatoes, peas, various vegetables, and flax. Livestock included hogs, cattle, sheep, and poultry. The work animals were horses or oxen. Small patches of cotton were grown, the lint being separated from the seed by hand and made into homespun garments. Tobacco was an important cash crop and was also grown for home use. Cattle, hogs, and sheep, and surplus farm products, along with the tobacco, were taken down Roanoke River in barges or flatboats to the towns along Albemarle Sound. Tar, pitch, turpentine, and lumber were also important sources of income to the early settlers.

The plantation system of farming prevailed until the Civil War period. There was demoralization of labor and an unusual drain on capital as a result of the war. A readjustment of farm conditions gradually took place. Crops which required the least labor and which were most readily converted into cash were grown. Cotton became the leading crop. During the early part of the decade between 1880 and 1890 the production of peanuts on a commercial scale was begun, and now peanuts rank second to cotton as a cash crop. Considerable of the former cotton acreage is now planted to peanuts. Corn, the most extensively grown crop, is also the principal

subsistence crop. The acreage devoted to small grains has decreased rapidly and is not large at present.

Table 2 gives the acreage and production of the principal crops, as reported by the censuses from 1880 to 1920, inclusive.

TABLE 2.—*Acreage and production of principal crops in 1879, 1889, 1899, 1909, and 1919*

Year	Cotton		Peanuts		Corn	
	Acres	*Bales*	*Acres*	*Bushels*	*Acres*	*Bushels*
1879	36,219	13,616	(1)	(1)	45,224	431,581
1889	33,792	6,587	947	19,300	39,973	227,473
1899	24,506	10,713	11,181	333,036	41,383	430,990
1909	24,439	10,781	25,868	658,495	33,626	299,488
1919	27,240	14,870	21,837	1,099,824	29,315	446,899

[1] Not recorded.

Table 3 shows the relative importance of the different crops and animal products for the year 1919, according to the 1920 census.

TABLE 3.—*Value of all agricultural products, by classes, in 1919*

Product	Value	Relative value	Product	Value	Relative value
	Dollars	*P. ct.*		*Dollars*	*P. ct.*
Cereals (mainly corn)	887,601	11.31	Livestock and livestock products:		
Peanuts	2,538,159	32.33	Animals sold and slaughtered (estimated)	427,790	5.45
Hay and forage	151,414	1.93	Dairy products, excluding home use	56,867	.72
Vegetables	354,954	4.52	Poultry and eggs	222,393	2.83
Fruits and nuts	16,180	.21	Wool, mohair, and goat hair	982	.01
All other crops (mainly cotton)	3,193,829	40.69	Total	7,850,169	------

The system of agriculture now prevailing in Northampton County is largely that common to the northeastern part of North Carolina. Cotton and peanuts are the principal cash crops. The agricultural and commercial standing of the county is based mainly on the prospective cotton crop; the general prosperity varies to a large extent with the price of cotton, which is still considered the staple farm product. According to the 1920 census, cotton in 1919 gave an average yield of 0.54 bale to the acre. This is a somewhat higher average yield than that of the Cotton Belt.

In 1919 peanuts yielded an average of more than 50 bushels to the acre. This average yield is considerably more than the average for northeastern North Carolina.

Tobacco was once the principal cash crop of the area now embraced by Northampton County, but the production decreased rapidly with the increase in cotton acreage. During the period of exceptionally high prices for tobacco (1918 to 1921) a considerable acreage was devoted to this crop, mainly in the southern half of the county. The census records a production of 184,297 pounds on 362 acres in 1919. A somewhat smaller acreage was planted in 1920 and 1921, but on account of the distance to markets and the fact that the soils in the sections where the greater part of the crop was grown were not well adapted to the production of tobacco, planting has greatly decreased

until in 1925 no tobacco was being grown for market. A medium weight, moderately bright leaf type was produced.

Corn is fed to the livestock on the farm or is ground into meal for home consumption. Generally the supply is adequate, but some corn is shipped into the county. Wheat was grown on 484 acres in 1919. The greater part of the wheat crop is ground in local gristmills for flour and feed. The rest is fed to the work animals. Most of the 355 acres in oats in 1919 was cut in the milk stage for the hay.

The 1920 census reports an expenditure of $163,042 in the county for feed in 1919. This represents an average expenditure of $122.40 for each farm reporting.

According to the census, hay was cut from 952 acres of cultivated grasses in 1919; from 1,192 acres of legumes (mostly soy beans and cowpeas); and from 607 acres of green grain. Coarse forage was grown on 11,945 acres. The total hay and forage production amounted to 6,252 tons. The hay and forage grown are inadequate to meet the demand. It is estimated by local dealers that about 1,500 carloads of hay alone will be shipped into the county this year (1925). This may be taken as the approximate annual average. The majority of the farmers prefer to grow cotton and peanuts and buy hay and other feeds.

The most important of the minor crops, grown mainly for home use, are sweet potatoes, potatoes, garden vegetables, watermelons, and sorghum. The principal fruit crops are early apples, peaches, figs, scuppernong grapes, and strawberries, which are generally produced in only small quantities for home consumption.

Soy beans, cowpeas, and crimson clover are grown for soil improvement in many parts of the county. About 300 acres of crimson clover are now cut for hay, the average yield being slightly more than 1 ton to the acre. This clover does well in all parts of the county. Peanut vines are cured and make a highly nutritious hay.

Hogs are raised on all the farms of the county, and the supply is generally adequate to meet the demand. In 1909, 19,970 hogs were sold or slaughtered in the county. These are mainly grade bacon and lard types resulting from the interbreeding of Duroc-Jersey, Hampshire, Essex, Poland China, and Berkshire breeds.

Practically every farmer keeps one or more cows to furnish milk and butter for home use and an occasional surplus for sale locally. Approximately $12,000 worth of dairy products were sold in 1919.

Surplus poultry and eggs are generally shipped to the Norfolk market. There are several large flocks of poultry near Rich Square and Woodland. The value of poultry and eggs sold in 1919 was $55,505.

From a study of the soils of the county it is believed that all the hay and other feedstuffs, meat, lard, butter, corn, and corn meal, and much of the flour now imported could be produced without any appreciable increase in the acreage now under cultivation. With the same careful attention to the preparation of the seed bed for small grains and corn, the cultivation of the corn, and the fertilization of these crops that is given to cotton and peanuts, and with the growing of clover and other legumes in rotations with cotton, peanuts, corn, and small grains there would be a very great increase in yields. With the raising of more hogs, beef cattle, and work animals, the larger supply of barnyard manure would result in still further increases.

The production of sufficient feed on the farms of the county would result in a balanced type of agriculture and would keep at home the large sums of money which now go outside the county.

There is little specialization of crops in different sections of the county as a result of various soil influences. Cotton and peanuts and the other crops are grown under a wide range of soil conditions. Throughout the northern half, which is the much better-drained part of the county, little or no farming is done on the more poorly drained soils, such as those of the Dunbar, Lufkin, and Coxville series. In the southern part these soils are all extensively farmed, owing to the fact that only very small areas of the better-drained soils occur there. In the northern part cotton is generally grown on the Marlboro, Greenville, and Orangeburg soils, and on Ruston fine sandy loam and Norfolk fine sandy loam; and peanuts and corn are more generally planted on the Ruston and Norfolk soils. In the southern part of the county cotton and peanuts are generally grown on the Dunbar soils and on Lufkin very fine sandy loam, because these soils are better drained than the Coxville soils. Wickham loam, which is the most extensive terrace soil, is considered one of the best cotton soils in the county. Congaree silty clay loam, the principal first-bottom soil, is considered the most productive soil in the county, but is subject to overflow during heavy rains. This soil, when farmed, is planted almost exclusively to corn.

There are a number of large, well-kept farm homes in the county. A few have modern conveniences such as electric lights and running water. However, the average farmhouse is of medium size and is not very well kept. Most of the numerous tenant houses are small. The barns are small, though generally of sufficient size to house the work animals and various crops. Usually there are several outbuildings rather than one large barn. Fences, which are mostly of woven wire, are generally well kept. On the larger farms operated as a unit, there is often a tractor which, as well as being used to break the land in spring, serves as a portable power plant for various operations on the farm; disk and turning plows for use with the tractor; walking 1-horse and 2-horse turning plows; disk harrows; riding and walking cultivators; cotton, peanut, and corn planters; manure spreaders; and fertilizer distributors. Peanut threshers are owned by some of the growers, and threshers drawn and operated by tractors travel about various communities as soon as the peanut-harvesting season begins. The work animals consist almost entirely of mules.

Systematic crop rotations are very seldom practiced in Northampton County. Cotton and peanuts are alternated by a majority of the farmers, but many fields, especially in the Occoneechee Neck section, have been planted continuously to cotton for as long as 40 years without a change. Of late years a few of the more progressive planters have begun 3-year and 4-year rotations, using legumes between the cotton and peanut crops.

Commercial and home-mixed fertilizers are used throughout the county. The 1920 census shows that 92.6 per cent of the farmers of the county used fertilizer in 1919, at a total outlay of $866,783 or an average of $267.44 a farm. Cotton receives the heaviest applications, commonly 600 to 1,200 pounds to the acre of a 2–8–2[1], 3–8–3, 4–8–4,

[1] Percentages, respectively, of nitrogen, phosphoric acid, and potash.

4–9–4, or 4–10–4 fertilizer, with later top-dressings varying from 50 to 100 pounds of nitrate of soda after the crop has been chopped out and from 100 to 200 pounds of nitrate of soda about the middle of July, when the crop is laid by. Corn land is given an application ranging from 400 to 700 pounds to the acre of a 2–8–2 or a 3–8–3 grade of fertilizer, with a top-dressing varying from 75 to 150 pounds of nitrate of soda at the last cultivation, or about the time the plants tassel. Peanuts, generally following cotton, receive no regular fertilization, but lime is applied at the rate of 500 or 700 pounds to the acre and usually before planting and at blossoming time an acreage application varying from 200 to 400 pounds of land plaster or gypsum is placed directly on the rows. Without the use of land plaster the nuts will not develop properly and there is a very large percentage of "pops" or empty pods. Barnyard manure is generally saved and applied to the land, but the quantity produced is small.

Most of the fertilizers used are ready mixed, but a number of the farmers mix their own. Superphosphate (acid phosphate), cottonseed meal, kainit, nitrate of soda, bone meal, and fish scrap are the materials commonly used. A generally used mixture consists of superphosphate, cottonseed meal, and kainit. Clover, soy beans, cowpeas, oats, and rye are grown to some extent for soil improvement.

Farm labor is not abundant. On the majority of the smaller farms most of the work is performed by the owner and his family or by neighbors who exchange labor. Each small farmer tries to grow only such quantities of various crops as can be handled by himself and his family. Practically all the farm laborers are negroes. When hired by the month they receive from $15 to $25 and board. Day laborers receive from $1 to $1.75. Cotton pickers receive from 50 cents to $1 a hundred pounds, depending largely on whether child or adult labor is used. Chiefly children and women are employed. According to the 1920 census, in 1919 hired labor was used on 32.8 per cent of the farms of the county at a total expenditure of $163,807 or $142.69 for each farm reporting.

In 1919 the average size of the farms in Northampton County was 63.5 acres.[2] Many farms, however, contain between 100 and 200 acres, and a few holdings cover 3,000 or more acres. Of the 3,501 farms in the county in 1919, 40.2 per cent were operated by the owners, 59.7 per cent by tenants, and 0.1 per cent by managers. Since 1879 there has been a steady increase in the percentage of farms operated by tenants.

Farms are rented mainly on a share basis. When the landlord furnishes the work animals, implements, and fertilizer the tenant receives one-third of the crop. When the tenant furnishes the work animals, implements, and one-half the fertilizer, he receives half the crop. The cost of ginning cotton and threshing peanuts is generally borne equally by the landlord and the tenant.

There is a very wide range in land values in Northampton County, the price depending more on location than on the state of improvement and character of the soil. Lands near the towns, on State highways, or near churches and schools are held for the higher prices. The extreme range in prices runs from $5 to $150 an acre. The average assessed value of farm land in the county in 1919 was $38.57 an

[2] The census tabulates each tenancy as a "farm."

acre. The value of wooded lands depends on the quantity and quality of the timber. In general, prices for improved lands near the towns or along the State highways range from $75 to $125 an acre. Improved lands some distance from towns and good roads bring only from $30 to $50 an acre.

SOILS

The soils of Northampton County are light colored, the surface soil ranging from red or brown to very light gray or almost white. Red and brown soils prevail in the extreme western part and light-gray or yellowish-gray soils throughout the greater part of the remainder of the county.

The soils contain a very small quantity of organic matter, owing to the fact that this area was covered with forest until it was partly cleared for agriculture. There was no great accumulation of vegetable matter in the soils under the rather heavy forest growth, as is the case in the prairie region of the Middle West where grasses have grown for years. In the wooded areas of the county, where there have been no fires, there is a very shallow covering of the leaf mold, and a small quantity of vegetable matter has been incorporated to a depth ranging from 1 to 3 inches.

The soils of the county are mainly acid in reaction and respond to the application of liberal quantities of lime. No layer of lime or calcium-carbonate accumulation occurs in the soil, though calcium in other combinations is present. The rocks from which these soils are derived contained calcium, and some of the rocks on the coastal plain probably contained it in the form of carbonates. The heavy rainfall, warm temperatures, and continual leaching have not allowed lime carbonate to accumulate, and any carbonate that may have been present in the parent rocks has been removed from the soil. In a few places, at a depth varying from 30 to 100 feet, are marl beds, but the depth at which the marl is found and the expense of digging prohibit its use.

There are a large number of soil types in the county, owing to the fact that a part of the piedmont plateau, some of the typical high, well-drained coastal plain, a part of the flatwoods section of the coastal plain, and broad river terraces and first bottoms are included.

The piedmont plateau part of the county covers approximately 25 square miles. In this particular region the relief is rolling or hilly and broken, the streams have cut deep channels, and erosion has been active. The surface soils have been subjected to considerable washing and change, resulting in varied textures, structures, and colors. In many places, particularly on the steeper slopes, erosion has kept close pace with the disintegration and decomposition of the rocks, thus preventing the normal development of a soil profile.

On the smoother surfaces a mature or well-developed soil is found. Cecil fine sandy loam is characteristic of such soil. Its topsoil consists of a grayish-brown or reddish-brown surface layer, from 1 to 3 inches thick, and a yellowish or reddish subsurface layer which continues to a depth varying from 6 to 10 inches. The typical subsoil varies in color from light red to deep red and consists of stiff, hard, but brittle clay which continues to a depth varying from 30 to 60 or more inches. Some finely divided mica scales and coarse quartz sand

grains are distributed throughout. Underlying the subsoil is light-red and yellowish, friable, partly decomposed rock which grades into the disintegrated gneiss and granite from which the soil has been derived. The profile of Cecil clay loam is not so well developed as that of Cecil fine sandy loam. The light-textured surface layer in many places has been removed, exposing the subsurface layer; the heavy red, stiff clay layer on the steeper slopes is in many places much thinner than typical; and the rotten rock lies from 20 to 40 inches below the surface. In a few places there is a gradation from the surface to the disintegrated granite, gneiss, and schist.

Closely associated with the Cecil soils is Appling fine sandy loam. This soil differs from the Cecil mainly in that the subsoil is not well developed, as there is no uniformity in the color, thickness, and degree of oxidation of this layer. Typical Appling fine sandy loam has a gray or yellowish-gray surface layer from 1 to 3 inches thick and a grayish-yellow or pale-yellow, friable subsurface layer which continues to a depth of 8 or 10 inches. The subsoil, between depths of 8 and 14 inches, is reddish-yellow or salmon-colored friable clay or heavy fine sandy clay which grades into mottled light-red and yellow, hard but fairly brittle clay continuous to a depth varying from 24 to 38 inches. The substratum consists of yellow, friable, partly decomposed parent rock mottled with light red, which grades into the soft, disintegrated granite and gneiss from which the soil is derived.

Another group of soils in the piedmont plateau of the county is derived from what has been termed the Carolina slates. These consist of predominantly light-gray, fine-grained slate rock, which, on weathering, breaks into bands and platy blocks stained with ocherous yellow and purplish red. These gradually weather into a variety of colors, including mottled light gray, yellow, pinkish, and purplish. This soft, weathered material may lie at a depth varying from 2 to 4 feet below the surface, but on some of the steeper slopes it comes within a few inches of the surface, and outcrops are common. Georgeville silty clay loam is the only soil derived from the slate in Northampton County.

In this county there occurs a group of soils or soil conditions which differ from those of the typical piedmont plateau or coastal plain. This group comprises soils whose surface, to a depth varying from 10 to 30 inches, is composed of coastal plain material, or light-gray or yellowish-gray sandy clay, overlying piedmont plateau material, or residual clay, grading into and derived from granite, gneiss, schist, and slates. Under such conditions no mature soil profiles have developed. Two soil series, the Bradley and Chesterfield, were recognized, and Bradley sandy loam, with a gravelly phase, and Chesterfield sandy loam are mapped. The Bradley soils vary in color from red to deep red or in places to mottled yellow and red and consist of heavy, somewhat tough but fairly brittle clay, which is commonly underlain, at a depth varying from 30 to 50 inches, by disintegrated rocks. Chesterfield sandy loam differs essentially from the Bradley soils in that the subsoil is yellow or mottled yellow and red, hard but brittle clay.

The most prominent group of soils in the county includes those which have a well-developed soil profile and represent the most mature soil. These soils occur in the northern part of the county east of the piedmont plateau. They occupy the high, level, or gently

rolling areas and are, for the most part, naturally well drained. In them, below a depth varying from 8 to 18 inches, are uniformly friable and rather heavy subsoils. The topsoils are light textured and contain only a small percentage of clay and silt in comparison with the subsoils. The parent material underlying the subsoils is prevailingly redder in color and of a more friable consistence than the typical subsoil. The subsoil is the heaviest layer, as it has received considerable of the finer material from the surface soil. In this group of soils the Norfolk, Marlboro, Orangeburg, Ruston, and Greenville series are represented.

In the Norfolk soils the topsoils consist of a gray or grayish-brown friable surface layer, from 1 to 3 inches thick, and a pale-yellow or grayish-yellow friable subsurface layer which continues to a depth ranging from 8 to 18 inches. The subsoil consists of yellow, friable material, commonly sandy clay or sand, which continues to a depth varying from 34 to 50 or more inches. The parent material is mottled purplish-red, yellow, and light-gray, hard but friable sandy clay of variable texture and structure. This material may have a thickness varying from 2 to 4 feet, and in many places is underlain by laminated light-gray material, streaked with ocherous yellow. One of the characteristic features of this soil is the occurrence of red splotches in the lower part of the subsoil or in the upper part of the substratum. These splotches appear to indicate the accumulation or segregation of iron at this depth. This accumulation of red material at a depth varying from 28 to 35 inches is also noticeable in the Marlboro soils. Of the Norfolk series the fine sandy loam, with a deep phase, sandy loam, with a deep phase, fine sand, and loamy fine sand were mapped.

The Marlboro soils closely resemble the Norfolk but contain more fine material in the topsoil, whose thickness in few places is more than 8 or 10 inches. Also the color of the topsoil is slightly darker or more brownish. The subsoil is slightly heavier and deeper yellow in color than that of the Norfolk soils; and the parent material is, in some places, redder and more friable in the upper part. Marlboro fine sandy loam and Marlboro very fine sandy loam are mapped.

The profile of the Orangeburg soils shows a gray or brown surface layer from 1 to 3 inches thick and a subsurface layer of pale-yellow or brownish-yellow friable material which continues to a depth varying from 12 to 18 inches. These two layers comprise the topsoil. The typical subsoil is bright-red, friable, sandy clay, continuous to a depth varying from 4 to 15 feet with practically no change in texture, color, or structure. Beneath this uniform layer is the parent material which is variable but which in many places is reddish-yellow or mottled red and yellow gravelly sandy material. Locally it is indurated gravelly sandy clay or sand. Orangeburg sandy loam was mapped.

Closely associated with the Orangeburg soils is the "red land" of the coastal plain, which has been classed in this county as Greenville fine sandy loam. A profile of this material shows a dark-brown or reddish-brown topsoil from 6 to 10 inches thick. In a few places a little vegetable mold lies on the surface. The subsoil consists of dark-red, heavy but friable fine sandy clay of uniform texture, color, and structure, which continues to a depth varying from 4 to 6 feet. The parent material is mottled red, yellow, and gray, hard but brittle

light sandy material, underlain by beds of gravel, sand, and light sandy material.

Another group of soils intermediate in color between the Norfolk on one hand and the Orangeburg and Greenville on the other, includes Ruston sandy loam, with a deep phase, and Ruston fine sandy loam, with a deep phase. The surface layer ranges from gray to brownish and is from 1 to 3 inches thick, and the subsurface layer is pale yellow and friable and continues to a depth varying from 10 to 18 inches. The subsoil is reddish-yellow or yellowish-red friable sandy clay, continuous to a depth ranging from 18 to 40 or more inches. The substratum, or the partly weathered parent material, consists of mottled yellow and gray very friable sandy clay.

Closely related in color to the Ruston soils is a group of soils which differ greatly in their texture and structure, particularly in the subsoil. The soils have a thin grayish or grayish-brown surface layer, underlain by a pale-yellow layer which continues to a depth of 5 or 10 inches. The subsoil is tough, compact, reddish-yellow clay in the upper part, commonly to a depth varying from 18 to 24 inches, and is mottled light-red and yellow, tough, heavy, compact, hard clay in the lower part, to a depth varying from 34 to 56 or more inches. The parent material is mottled red and yellow with some gray, friable material resembling sandy clay. These soils are known as the Cuthbert, and the fine sandy loam was mapped.

The greater part of the southern portion of the county is poorly drained, the surface being prevailingly flat with slight depressions here and there. Natural drainage has not been well established. In this part of the county the soils are much finer in texture, the subsoils are much heavier, and definite soil profiles have not been developed as in the soils of the northern and western parts. The profile of the highest and best-drained areas in this section shows a gray surface layer and a yellowish-gray subsurface layer which continues to a depth varying from 6 to 10 inches. These two layers constitute the topsoil. The subsoil is heavy, yellowish fine sandy clay or friable clay, grading, at a depth varying from about 18 to 24 inches, into mottled light-red, yellow, and gray, heavy, tough clay which continues to a depth of 40 or 50 inches. Beneath the subsoil is mottled light-yellow, red, and gray, friable very fine sandy loam. Soils having this profile have been classed in the Dunbar series. Dunbar fine sandy loam and Dunbar very fine sandy loam, with a well-drained phase are mapped.

The more poorly drained soils are included in the Lufkin and Coxville series. In the Lufkin series there are two soil types, the very fine sandy loam and the silt loam. The surface soils are gray, and the subsurface layers are grayish yellow or yellowish gray to a depth varying from 6 to 10 inches. The upper part of the subsoils is brownish-yellow, tough, heavy clay which continues to a depth varying from 18 to 24 inches, where it grades into light-gray, heavy, plastic clay or silty clay streaked with rust brown. This layer is underlain, at a depth varying from 40 to 70 inches, by mottled gray and brown sticky sand.

The Coxville soils differ from the Lufkin in that there is more gray in the surface layer, and that the subsurface layer is gray mottled with yellow, whereas the subsoil is mottled gray, yellow, and red heavy clay which continues to a depth of 30 or 40 inches, where the

gray and yellow colors predominate. The fine sandy loam, very fine sandy loam, and silt loam members of the Coxville series were mapped.

Along Roanoke and Meherrin Rivers and on some of the larger creeks of the county, rather extensive areas of terraces or second bottoms and first bottoms or overflow areas have developed. Along the two rivers the soils are composed of material brought down from the piedmont plateau and deposited during times of overflow. Except locally there is no well-developed soil profile. The surface material gradually passes into the subsoil, which continues to a depth of 3 or 4 feet, where either heavier or lighter material occurs. There is no regularity in the texture or structure of this underlying material.

Of the Wickham soils, occurring on the terraces, the fine sandy loam, loam, and loamy sand have been mapped. The surface soils range in color from light brown to reddish brown, and the subsoils are dominantly reddish-brown friable clay, containing a few finely divided mica scales.

The Altavista soils, which also occupy terraces, differ from the Wickham in that the surface soils are gray or yellowish gray and the subsoils are yellow or brownish yellow. Altavista fine sandy loam and Altavista fine sand were mapped.

On the well-drained terraces a few areas of poorly drained soils have been mapped as Roanoke very fine sandy loam and Roanoke silt loam. The surface soils of these soils are gray or dark gray or mottled gray and rust brown, and the subsurface layers are pale yellowish gray to a depth varying from 4 to 8 inches. The subsoils are mottled gray and yellow, drab-gray, or gray and yellow streaked with red or rust brown, heavy, tough, plastic, impervious clay.

The streams which rise in the coastal-plain section of the county have developed small second bottoms or terraces, and the soils have been classed in the Kalmia and Myatt series. The Kalmia soils have, in a few places, developed a soil profile somewhat similar to that of the Norfolk soils. The topsoil consists of a thin, gray surface layer over a pale-yellow layer which continues to a depth varying from 6 to 14 inches. The subsoil is yellow, friable material to a depth of 30 or 40 inches, grading into mottled light-gray and brownish-yellow, rather heavy, sticky, sandy clay. The fine sandy loam and the fine sand of this series were mapped.

Associated with the Kalmia soils is Myatt fine sandy loam, which occupies the low, flat, poorly drained areas. This soil has a dark-gray surface layer, passing into a light-gray or almost white subsurface layer, which is underlain by mottled yellow and light-gray, heavy, plastic, fine sandy clay.

Extensive areas of Congaree silty clay loam are mapped along Roanoke and Meherrin Rivers. This soil occurs in very uniform areas of reddish-brown silty clay loam ranging in thickness from 4 to 20 or more feet without any noticeable change in color, texture, or structure. A very few patches of Congaree fine sandy loam are mapped along with the Congaree silty clay loam.

Meadow and swamp represent miscellaneous classifications of material rather than definite soil types. They vary greatly in color, texture, and structure. Meadow occurs mainly along the smaller streams and is better drained than swamp.

In the following pages of this report the various soils of Northampton County are described in detail and their relation to agriculture is discussed. The accompanying soil map shows their distribution; and Table 4 gives their acreage and proportionate extent.

TABLE 4.—*Acreage and proportionate extent of soils mapped in Northampton County, N. C.*

Type of soil	Acres	Per cent	Type of soil	Acres	Per cent
Norfolk fine sandy loam	15,552	10.2	Wickham loam	14,336	4.1
Deep phase	19,840		Wickham fine sandy loam	2,368	.7
Norfolk sandy loam	1,088	.5	Wickham loamy sand	1,536	.4
Deep phase	768		Cecil fine sandy loam	1,600	.4
Norfolk fine sand	896	.3	Cecil clay loam	2,880	.8
Norfolk loamy fine sand	8,192	2.4	Appling fine sandy loam	2,048	.6
Marlboro very fine sandy loam	13,440	3.9	Georgeville silty clay loam	2,368	.7
Marlboro fine sandy loam	10,304	3.0	Bradley sandy loam	4,160	2.6
Ruston fine sandy loam	24,704	8.3	Gravelly phase	4,928	
Deep phase	4,224		Chesterfield sandy loam	6,400	1.8
Ruston sandy loam	2,496	1.8	Altavista fine sandy loam	2,048	.6
Deep phase	3,648		Altavista fine sand	896	.3
Orangeburg sandy loam	2,304	.6	Roanoke very fine sandy loam	5,504	1.6
Greenville fine sandy loam	4,352	1.3	Roanoke silt loam	3,712	1.1
Cuthbert fine sandy loam	14,208	4.1	Kalmia fine sandy loam	2,112	.6
Dunbar very fine sandy loam	14,912	6.4	Kalmia fine sand	192	.1
Well-drained phase	7,104		Myatt fine sandy loam	960	.3
Dunbar fine sandy loam	13,824	4.0	Congaree fine sandy loam	704	.2
Lufkin very fine sandy loam	31,552	9.1	Congaree silty clay loam	14,464	4.2
Lufkin silt loam	5,376	1.6	Meadow	2,560	.7
Coxville fine sandy loam	10,240	3.0	Swamp	26,304	7.6
Coxville very fine sandy loam	16,960	4.9			
Coxville silt loam	18,176	5.2	Total	346,240	

NORFOLK FINE SANDY LOAM

In virgin or wooded areas Norfolk fine sandy loam has a surface covering, from 1 to 3 inches thick, of gray or dark-gray loamy fine sand. This grades into pale-yellow or grayish-yellow loamy fine sand or light fine sandy loam which continues to a depth varying from 12 to 18 inches. The subsoil is light-yellow or yellow, friable, mellow fine sandy clay to a depth varying from 35 to 60 inches and grades into mottled purplish-red, gray, and yellow, hard but brittle fine sandy clay. In most areas this is underlain, at a depth ranging from 7 to 9 feet, by laminated light-gray friable material streaked with ocherous yellow. In long-cultivated areas the surface soil, to a depth ranging from 4 to 7 inches, is light-gray or almost white loamy fine sand lacking in organic matter.

Included with this soil in mapping are several small areas of Norfolk very fine sandy loam. These areas differ from the typical fine sandy loam in that both the surface soil and subsoil are much finer in texture, heavier, and more shallow.

Norfolk fine sandy loam occurs throughout the northern part of the county from Pine Forest Church on the west to the Hertford County line on the east. An isolated area, slightly more than 1 square mile in extent, is in the extreme southeastern corner of the county adjacent to Bertie County and along the head of Sandy Run. This soil is most typical in the vicinities of Conway, Pendleton, and Severn. It generally occupies comparatively high interstream areas and the slopes approaching the stream courses. The surface is nearly level or undulating and rolling. Natural drainage is well established on practically all areas, but ditching is necessary on a few of the flatter areas to remove the excess water following protracted rains.

Norfolk fine sandy loam is one of the most important agricultural soils in the county. About 70 per cent of it is under cultivation. The remainder is forested with pine, various oaks, and scattered hickory, maple, beech, birch, redbud, gum, poplar, elm, cedar, dogwood, persimmon, sassafras, holly, and sourwood. The undergrowth consists of gall berry and service berry bushes and wire grass. On the included patches of very fine sandy loam long leaf pines are noticeable.

This soil is used for the production of all the crops common to the county, but peanuts, cotton, and corn are the principal crops. The crops produced chiefly for home consumption are sweet potatoes, potatoes, garden vegetables, melons, and fruits. Rye, oats, soy beans, cowpeas, and clover are sometimes grown as soil-improving crops and for feed.

Peanuts yield from 1,100 to 2,500 pounds to the acre, corn from 15 to 35 bushels, and cotton from one-third bale to 1 bale.

All crops are fertilized on this soil except peanuts, which generally alternate with cotton, a heavily fertilized crop. When fertilized, peanuts receive from 500 to 800 pounds to the acre of a 2–8–2 grade, or from 400 to 800 pounds of a home mixture of cottonseed meal, superphosphate, and kainit. This is applied in spring just before planting. Lime is used on practically every field devoted to peanuts. Applications varying from 400 to 1,000 pounds to the acre just before the soil is broken in the spring are followed by a top-dressing ranging from 200 to 400 pounds of land plaster or gypsum applied directly to the plants when they are in blossom. Corn is usually given an acreage application of 300 or 400 pounds of a 2–8–2 or 3–8–3 commercial fertilizer, with a later top-dressing of 100 or 200 pounds of nitrate of soda when the crop is laid by. Cotton is given from 600 to 1,200 pounds to the acre of a 3–8–3, 4–8–4, 3–9–3, 4–9–4, or 4–10–4 commercial grade just before planting. A top-dressing of nitrate of soda at the rate of 150 or 250 pounds to the acre is made when the crop is chopped out, and when it is laid by in July another top-dressing of 100 or 200 pounds to the acre of nitrate of soda is made. Some farmers use home-mixed fertilizers on this soil, in mixtures practically equivalent to a 4–10–4 or 6–10–6 commercial grade. From 400 to 800 pounds to the acre of the home mixtures is the general application on cotton, with the same quantity of nitrate of soda as the later top-dressings. This soil is not generally plowed deeply. Light work animals and implements are used.

This soil commands between $30 and $100 an acre, depending largely on the location with respect to good roads and towns. The value of uncleared areas generally depends on the value of the timber.

Norfolk fine sandy loam is one of the most desirable soils in Northampton County. It is well drained, mellow, easily tilled, and capable of being maintained in a high state of productiveness. It is deficient in organic matter, which can be supplied by growing and turning under green-manure crops such as rye, oats, vetch, clover, soy beans, and cowpeas. It is well suited to the production of potatoes, truck crops, and bright-leaf tobacco. The results of analyses and experiments on the soil on several test farms conducted by the North Carolina Department of Agriculture show that this soil is decidedly poor in nitrogen and lime, and that phosphoric acid and potash are less limiting factors in the production of the average farm crops.

Nitrogen may be profitably supplied in the form of legumes, green-manure crops, and stable manure. Lime should be supplied in liberal quantities. Potash and phosphates, although less important than nitrogen and lime, must be used in some form.

A 4-year rotation and fertilizing plan recommended by the North Carolina Agricultural Experiment Station is as follows: First year, cotton with rye sown after the first picking and turned under in the spring. At planting apply a mixture containing from 150 to 300 pounds of superphosphate, from 200 to 400 pounds of cottonseed meal, and from 100 to 200 pounds of kainit to the acre. A top-dressing of 100 or 200 pounds of nitrate of soda should be applied later. Second year, peanuts, with rye sown in the fall after hogs have harvested the waste peanuts. The rye is turned under in the spring. From 800 to 1,200 pounds of lime to the acre should be applied before planting peanuts and from 150 to 300 pounds of gypsum when the plants are in blossom. Third year, soy beans for seed or hay, followed by crimson clover to be turned under in spring after the first cutting. Fertilize with from 200 to 400 pounds to the acre of superphosphate and from 50 to 75 pounds of kainit. Fourth year, corn, with cowpeas or soy beans, all the roughage to be turned under. Fertilize with from 100 to 200 pounds to the acre of superphosphate mixed with from 50 to 100 pounds of kainit. Later apply a top-dressing of 50 or 75 pounds of nitrate of soda to the acre. All the stable manure available should be applied to the land each spring.

A recommended 3-year rotation is as follows: First year, peanuts, followed by crimson clover sown in the fall; second year, crimson clover turned under in the spring, corn planted, and soy beans or cowpeas sown in the corn in July; third year, cotton, with rye sown in the cotton during early fall.

Norfolk fine sandy loam, deep phase.—The deep phase of Norfolk fine sandy loam is separated from the typical soil on account of its deeper surface soil and somewhat lower productiveness. In wooded areas the topsoil, to a depth of 1 or 2 inches, is gray fine sand, underlain by pale-yellow or grayish-yellow loamy fine sand which continues to a depth varying from 24 to 30 inches. In some places a third layer occurs in the topsoil. This consists of pale-yellow fine sandy loam occurring at a depth varying from 18 to 32 inches. The subsoil is light-yellow friable fine sandy clay continuous to a depth of 45 or more inches. The parent material is similar to that of typical Norfolk fine sandy loam. In cultivated areas the surface soil is light gray or almost white, owing to the leaching out of the organic matter. Owing to its loose structure, the soil is easily cultivated with light teams and implements.

The deep phase of Norfolk fine sandy loam is one of the extensive soils in the county. It occurs in comparatively large areas in the northern part of the county, from Stancell to Hertford County, and is most typical between Margaretsville, Conway, and Maple Fork Branch. It occurs on interstream ridges and on slopes approaching the stream courses. It generally occupies slightly higher areas than typical Norfolk fine sandy loam. The surface is undulating or rolling, and drainage is excellent.

This soil is of even greater importance in the agriculture of Northampton County than is typical Norfolk fine sandy loam.

Because of its elevation and good drainage it is highly desirable for home sites. The greater part of it has at one time been cleared, and nearly 65 per cent is now under cultivation. Forested areas support a great variety of hardwoods, pine, and some cedar. Practically the same crops are grown as on the typical soil, and farming methods are the same. Fertilization is somewhat heavier than on the typical soil. Crop yields are slightly lower with the same amount of fertilizer than on the typical soil, but as the general practice is to use more fertilizer on this phase the crop yields are about equal.

This is a desirable soil for peanuts and truck crops. In adjoining counties it is considered one of the best soils for the production of bright-leaf tobacco and early truck crops. It can be improved by the methods suggested for the improvement of the typical soil.

NORFOLK SANDY LOAM

The surface soil of Norfolk sandy loam consists of a thin layer of gray loamy sand over pale-yellow or grayish-yellow loamy sand or light sandy loam which continues to a depth varying from 12 to 18 inches. The subsoil, to a depth of 35 or more inches, is light-yellow or yellow friable sandy clay, grading into the partly weathered parent material which consists of mottled or streaked yellow, light-gray, and red, hard but brittle coarse sandy clay. In cultivated fields the surface soil, to a depth varying from 4 to 7 inches, is loamy sand of a light-gray or gray color, depending on the percentage of organic matter present.

Included in mapped areas of this soil are some small areas having a coarser texture, and in a few places water-rounded gravel covers the surface thickly and is present throughout the subsoil. These gravelly areas are shown by gravel symbols on the soil map.

Norfolk sandy loam occurs in a few small areas throughout the northern part of the county. The largest are along the Hertford County line east of Burnt Bridge and 1½ miles east of Stancell. The soil occurs on comparatively high ridges near the slopes to the stream courses, and the relief is undulating or rolling. Owing to the porosity of the surface soil and the friability of the subsoil, drainage is excellent.

This is an unimportant soil in Northampton County on account of its small extent. Only a small part of it is under cultivation, the greater part being covered principally with pine and oak.

The principal crops produced are corn and peanuts. Yields average somewhat less than on Ruston sandy loam. This soil is managed much as is Ruston sandy loam and is given about the same fertilizer treatment.

The current selling price of Norfolk sandy loam ranges from $30 to $75 an acre.

Norfolk sandy loam, deep phase.—The deep phase of Norfolk sandy loam differs from the typical soil in that the subsoil is covered with a much thicker mantle of sandy loam, generally occurring at a depth varying from 24 to 30 inches below the surface.

The deep phase of Norfolk sandy loam is not an important agricultural soil because of its small extent. It is less productive than typical Norfolk sandy loam. Only a small proportion is under cultivation.

NORFOLK FINE SAND

The surface soil of Norfolk fine sand consists of light-gray, loose, fine sand from 6 to 12 inches thick, underlain by pale-yellow or grayish-yellow, loose, incoherent fine sand which continues to a depth of 45 or more inches. In wooded areas the 1-inch or 2-inch surface layer is generally gray, slightly loamy fine sand. In cultivated fields the surface soil generally has a pepper-and-salt appearance or may be almost white, owing to the leaching out of the organic matter. Several small areas of Norfolk sand are included in mapped areas of Norfolk fine sand.

Norfolk fine sand occurs principally in small areas in the north-central part of the county near the Virginia State line. The largest area is along the State line north of Turner Crossroads. The soil occupies slightly higher elevations than the surrounding soils. The surface is gently rolling or hummocky, with an occasional ridge or knoll. Both surface soil and subsoil are open and porous, allowing free passage of water. Drainage is excellent or excessive.

Practically all of the Norfolk fine sand has been cleared of the original forest and brought under cultivation. It is not productive, and excessive leaching takes place, owing to the porous structure. Crops suffer during even short periods of drought. Only a very small part of the total area is now under cultivation. Some corn is grown, but the yields are low. Abandoned areas have partly grown up in shortleaf pine.

In other eastern North Carolina counties Norfolk fine sand is used to some extent for the production of truck crops and bright-leaf tobacco. Reforestation would probably be the best use for this soil in Northampton County.

NORFOLK LOAMY FINE SAND

In wooded areas Norfolk loamy fine sand has a surface layer, from 2 to 4 inches thick, of gray fine sand underlain by pale-yellow or grayish-yellow mellow fine sand continuous to a depth varying from 24 to 35 inches. This is underlain by yellow fine sandy loam which continues to a depth of 45 or more inches, where it grades into mottled light-gray and yellow friable sandy clay material streaked with red. In cultivated fields the surface soil is nearly white, owing to the leaching out of the organic matter. Included with this soil in mapping are a very few small areas of Norfolk loamy sand. The soil in these is more open and porous than the typical loamy fine sand and is even more subject to leaching. A few small areas are covered with water-rounded quartz gravel. These areas are shown on the soil map by gravel symbols.

Norfolk loamy fine sand occurs in small areas throughout the northern part of the county. The largest are along Kirbys Creek and Rogers Swamp west of Pendleton, and smaller areas are at Meherrin, south of Margaretsville, east of Branchs Bridge, southeast of Jordans Mill, and along Maple Fork Branch. The soil occupies high, rather rolling, interstream areas, the slopes to stream courses, and isolated knolls or hummocks. It is generally higher than the the surrounding soils. Surface and internal drainage are excellent.

Norfolk loamy fine sand is considered one of the less important farming soils of the county. It is subject to excessive leaching, is

droughty, and is not naturally productive. Probably 80 per cent of it has at one time or another been under cultivation. At present less than half of it is tilled, the abandoned areas being covered with a fair growth of old-field pine. On the original forested areas the growth consists of pine and oak and various scattered hardwoods.

The principal crops are corn and peanuts, and cotton and sweet potatoes are grown to some extent. Corn yields from 10 to 25 bushels to the acre, peanuts from 800 to 1,600 pounds, and cotton from one-fourth to one-half bale. All crops are fertilized, the better yields following the more heavy fertilization.

Norfolk loamy fine sand may be greatly improved by the addition of organic matter in the form of stable manure or green-manure crops such as rye, oats and vetch, soy beans, cowpeas, or clover. This soil is widely used in other eastern North Carolina counties for the production of early truck crops, peanuts, potatoes, sweet potatoes, and bright-leaf tobacco.

MARLBORO VERY FINE SANDY LOAM

In wooded areas the surface soil of Marlboro very fine sandy loam, to a depth varying from 1 to 3 inches, is gray, dark-gray, or brownish-gray very fine sandy loam. This grades into pale-yellow or brownish-yellow very fine sandy loam or heavy very fine sandy loam from 6 to 10 inches thick. The subsoil is deep-yellow or brownish-yellow, heavy, slightly sticky but friable very fine sandy clay continuous to a depth varying from 30 to 40 inches. The upper layer of the parent material is mottled red and yellow, very friable fine sandy clay, and the underlying layer is heavy, hard very fine sandy clay of a mottled light-gray, yellow, and purplish color. Small iron accretions are common on the surface and throughout the soil in a few areas. In cultivated fields the surface soil, to a depth varying from 4 to 7 inches, has a yellowish-gray or brownish color, depending on the amount and character of the organic matter present, and may show spots of yellow or faintly reddish yellow where some of the subsoil has been mixed with the surface soil. On a few of the more rolling areas some of the surface soil has been washed away, leaving the deep yellow subsoil exposed in spots. In a few places the reddish upper layer of the parent material is within 24 inches of the surface.

Marlboro very fine sandy loam occurs throughout the north-central part of the county, especially between Seaboard and Creeksville. The surface varies from nearly level to undulating and gently rolling. The soil occupies rather broad interstream areas and gentle slopes to the stream courses.

Surface drainage is generally well established on this soil, but the flatter areas require ditching to remove excess water after heavy rainfall. Internal drainage is good.

Marlboro very fine sandy loam is one of the more important agricultural soils of Northampton County. Practically 75 per cent of it is under cultivation. The timber growth consists principally of shortleaf pine and various oaks, with scattered hickory, maple, elm, holly, dogwood, beech, birch, sourwood, gum, redbud, poplar, persimmon, and cedar.

This soil is used for the production of all crops common to Northampton County. Cotton is the principal crop, although corn and

peanuts are grown on considerable acreages. Cotton and peanuts are the cash crops, and corn is the subsistence crop. Sweet potatoes, potatoes, vegetables, melons, and fruits are produced for home consumption. Some clover, rye, oats, cowpeas, and soy beans are grown for feed and as soil-improving crops. Crop yields generally average higher than on Norfolk fine sandy loam. Cotton produces from one-half to 1½ bales to the acre, with a general average of 1 bale on well-tilled farms; peanuts from 1,500 to 3,000 pounds; and corn from 15 to 40 bushels.

All the crops grown on this soil are fertilized, except peanuts which are generally alternated with cotton, a heavily fertilized crop. From 500 to 1,200 pounds to the acre of lime is generally applied to the peanut land when the soil is broken in the spring, and when the plants are in blossom from 200 to 400 pounds to the acre of gypsum is applied directly to the rows. Cotton is given an application ranging from 500 to 1,000 pounds to the acre of a 3–8–3, 4–8–4, 4–9–4, or 4–10–4 fertilizer just before planting, and top-dressings of 100 or 200 pounds to the acre of nitrate of soda when the crop is chopped out and between 75 and 150 pounds when the crop is laid by about the middle of July. Home-mixed fertilizers are used by some farmers. Cottonseed meal, superphosphate, kainit, and fish scrap are the more commonly used ingredients. The resultant mixture is practically equivalent to a 4–10–4 commercial grade. From 400 to 700 pounds to the acre of this mixture is used, with from 75 to 150 pounds of nitrate of soda at the two later top-dressings. This is the best-farmed soil in the sections in which it occurs.

The current selling price of Marlboro very fine sandy loam varies from $40 to $125 an acre, depending largely on the location with respect to towns, good roads, and schools, and on the state of improvement.

Marlboro very fine sandy loam is one of the more highly desirable soils in Northampton County. It is generally sufficiently well drained, is fairly easily tilled, and is capable of being maintained in a high state of productiveness. Constant cropping with clean-cultivated crops, such as cotton and peanuts, has prevented the accumulation of organic matter in the soil. Green-manure crops can be grown to supply this deficiency. All available stable manure should be applied. Suggestions for crop rotations for Norfolk fine sandy loam apply also to this soil.

MARLBORO FINE SANDY LOAM

Marlboro fine sandy loam in virgin areas has a gray or grayish-brown fine sandy loam surface layer, 2 or 3 inches thick, underlain by pale-yellow or grayish-yellow fine sandy loam which continues to a depth varying from 7 to 10 inches. The subsoil is deep-yellow or brownish-yellow, heavy, slightly sticky but friable fine or very fine sandy clay which continues to a depth of 35 or more inches. The underlying parent material, to a depth varying from 50 to 70 inches, consists of mottled red and yellow, very friable fine sandy clay underlain by mottled light-gray, yellow, and purplish, heavy, tough very fine sandy clay. Both surface soil and subsoil contain more fine material and are more compact in consistence than corresponding layers in Norfolk fine sandy loam. Small iron concretions are common in some areas. In cultivated fields the surface soil, to a depth vary-

ing from 5 to 8 inches, is yellowish gray or brownish gray, depending on the percentage of organic matter present. In the more deeply plowed fields are spots of yellow, where the subsoil has been mixed with the surface soil. On the more rolling areas, some of the surface soil has eroded, leaving the subsoil exposed in places.

Marlboro fine sandy loam occurs in small areas in the northern part of the county, east and west of the Atlantic Coast Line Railroad. The largest areas mapped are between Seaboard and Galatia and along Potecasi Creek west of Creeksville.

Marlboro fine sandy loam has a nearly level or undulating and gently rolling surface. Natural drainage courses are few, but the run-off is good, except in the flatter areas. Internal drainage is good. Ditching is necessary on the more level areas to carry off the excess water following heavy rains.

This is an important soil in the sections where it predominates. About 60 per cent of it is under cultivation. The remainder is forested with pine, various oaks, and scattered hickory, maple, gum, poplar, dogwood, holly, persimmon, and cedar.

Marlboro fine sandy loam is used for the production of all crops common to the county. Cotton is the chief crop, but corn and peanuts are extensively grown. Potatoes, vegetables, melons, and fruits are produced for home use. Soil-improvement crops are grown to a very small extent. Cotton yields from one-half to 1 bale to the acre, corn from 15 to 40 bushels, and peanuts from 1,100 to 3,000 pounds.

This soil is managed much as is Marlboro very fine sandy loam, and the fertilizer treatment is practically the same. Crop yields average slightly less, however, than on Marlboro very fine sandy loam.

The current selling price of Marlboro fine sandy loam ranges from $50 to $125 an acre, depending on the location and character of improvements.

RUSTON FINE SANDY LOAM

In wooded areas the 1-inch or 2-inch surface layer of Ruston fine sandy loam is gray or dark-gray fine sandy loam. The subsurface layer, to a depth ranging from 12 to 18 inches, consists of pale-yellow or brownish-yellow, light-textured fine sandy loam or loamy fine sand. The subsoil is yellowish-red, reddish-yellow, brownish-red, or reddish-brown friable fine sandy clay continuous to a depth ranging from 30 to 50 inches. The underlying material is mottled yellow and gray, very friable sandy clay, from 2 to 4 feet thick, underlain by mottled light-gray, red, and rust-brown sandy clay material. In cultivated fields the surface soil, to a depth varying from 4 to 7 inches, is loamy fine sand or light fine sandy loam of a grayish-brown, gray, or light-gray color, depending on the quantity and kind of organic matter present. In a few areas in the eastern part of the county considerable water-rounded quartz gravel is present throughout. Such areas are shown by gravel symbols on the soil map.

Included with Ruston fine sandy loam in mapping are several small spots of Ruston very fine sandy loam. This soil differs principally from typical in that the surface soil is much finer in texture and is not so deep and the subsoil is somewhat heavier. This very fine sandy loam occurs in the central part of the county between Gum-

berry and Faisons Old Tavern, southwest of Mount Carmel Church, and northwest of Seaboard.

Ruston fine sandy loam occurs throughout the northern part of the county. It is most extensive in the section between Camp Store on the west and Margaretsville on the east, the largest areas being mapped near Garysburg, Concord Church, and Preas Crossroads. The soil occupies comparatively high interstream areas and the slopes leading to the stream courses. The surface ranges from gently undulating to rolling and strongly rolling. Drainage is very well established.

Ruston fine sandy loam is one of the more important agricultural soils of Northampton County. About 65 per cent of it is under cultivation, the remainder being forested with pine and oak and other scattered hardwoods. Abandoned fields are grown up with loblolly and shortleaf pine.

Cotton and peanuts are the cash crops on this soil, and corn is the subsistence crop. Cotton and peanuts are generally grown alternately on the same fields, cotton being planted two years and peanuts one year. All crops common to the county are grown on this soil.

Cotton yields from one-half to 1½ bales to the acre, peanuts from 1,200 to 2,800 pounds, and corn from 18 to 40 bushels. Cotton is given heavy applications of commercial fertilizers, from 600 to 1,200 pounds to the acre of a 3–8–3, 4–8–4, or 4–9–4 grade being used before planting, with later top-dressings of nitrate of soda at the rate of 100 or 150 pounds to the acre when the crop is chopped out and of 75 to 100 pounds when the first squares open. Peanuts are not generally fertilized, but receive from 400 to 800 pounds to the acre of lime, generally before the land is broken, and a top-dressing of 100 or 200 pounds of land plaster or gypsum when the plants are in blossom. Corn receives from 400 to 600 pounds to the acre of a 2–8–2 or 3–8–3 fertilizer, and generally a top-dressing of 100 or 150 pounds of nitrate of soda just before the plants tassel. Crops on this soil are generally flat cultivated. The greater part of the land is farmed by tenants.

Land values of Ruston fine sandy loam range from $30 to $100 an acre, the price asked depending largely on the state of improvement and the location with respect to towns and good roads.

Ruston fine sandy loam is an easily tilled soil and is capable of being kept in a state of high productiveness. As is true of practically all of the soils of the county, its greatest need is organic matter. Constant cropping with no return to the soil except commercial fertilizers has left many fields very deficient in organic matter. The growing of winter cover crops such as rye, clover, oats, and vetch, and the incorporation of these crops in the soil would be very beneficial, resulting in an abundant supply of organic matter as well as nitrogen from the leguminous crops. Rotations are strongly recommended by the North Carolina Agricultural Experiment Station. The 3-year and 4-year rotations suggested for Orangeburg sandy loam are suitable for use on this soil also.

Ruston fine sandy loam, deep phase.—The deep phase of Ruston fine sandy loam is separated from typical Ruston fine sandy loam because of the greater depth of the fine sandy loam or loamy fine sand mantle over the subsoil. In its natural state this soil contains little organic matter. Owing to its loose consistence it is easily tilled with light teams and implements. The surface soil is generally lighter

gray than that of the typical soil. The subsoil, generally occurring at a depth ranging from 24 to 32 inches, is in most places somewhat lighter reddish or brownish yellow than that of the typical soil. It is underlain, at a depth varying from 40 to 60 inches, by material similar to that under the subsoil of the typical soil.

The deep phase of Ruston fine sandy loam occurs in comparatively small, irregular areas from Stancell in the northwestern part of the county to Conway in the eastern part. The largest areas are east of Margaretsville and northeast of Conway. Areas containing a considerable quantity of water-rounded quartz gravel on the surface and throughout the soil are shown by gravel symbols on the soil map.

This soil occurs on undulating or rolling and ridgy areas and on some very gently undulating or nearly level areas between higher ridges of the typical soil. Drainage is thorough. Percolation of soil water is so rapid that fields may be tilled shortly after rains. During periods of protracted drought crops sometimes suffer on this soil.

This deep soil is of much smaller extent than the typical soil. The greater part of it has been under cultivation at one time or another, but at present probably less than one-half is tilled. Abandoned areas have largely grown up in old-field pine. Original growth on the uncleared areas consists of shortleaf pine and various oaks, with some dogwood, maple, cedar, hickory, gum, and sassafras.

In general, the same crops are grown and the same methods of management practiced as on the typical soil. Heavier fertilization is necessary to maintain the same yields, as the deeper soil allows greater leaching.

RUSTON SANDY LOAM

Ruston sandy loam in forested areas has a gray or dark-gray sandy loam surface layer, from 2 to 3 inches thick, underlain by yellow loamy sand or loose sandy loam, which continues to a depth varying from 12 to 20 inches. The subsoil, to a depth ranging from 35 to 50 inches, is friable sandy clay or fine sandy clay varying in color from yellowish brown to brownish red or reddish brown. The upper layer of the parent material is mottled red or rust-brown and light-gray, friable sandy material from 1 to 3 feet thick, underlain by bluish-gray coarse sandy material slightly mottled with red. Beds of gravel occur in many places at greater depth. In some places the gravel is closely cemented with iron. In cultivated fields the surface soil, to a depth of 6 or 8 inches, is loose loamy sand or light sandy loam of a gray or grayish-brown color, depending on the quantity and character of the organic matter present. Considerable small water-rounded quartz gravel is on the surface and throughout the soil in many places. These gravelly areas are shown on the soil map by gravel symbols.

This soil occurs in small areas throughout the north-central part of the county from Stancell to Milwaukee. The largest areas are south and southwest of Milwaukee. The relief is generally gently rolling or rolling, becoming more steeply rolling near the slopes to stream courses. In general the soil occupies a somewhat higher position than the surrounding soils. Owing to the rolling relief, loose consistence, and porosity of the soil, areas are well drained.

Probably half of the Ruston sandy loam is under cultivation. It is considered a desirable soil for all the crops generally grown in the county. The forested areas support shortleaf pine, various oaks,

and some hickory, gum, and dogwood. The principal crops are cotton, corn, and peanuts. Cotton yields from one-third to 1 bale to the acre, corn from 15 to 30 bushels, and peanuts from 1,100 to 2,000 pounds. The fertilizer treatment is similar to that on Orangeburg sandy loam.

The current selling price of this land ranges from $20 to $80 an acre, depending on the location.

Many areas of this soil are deficient in organic matter. The soil may be brought to a high state of productiveness by turning under green-manure crops and by using rotations containing legumes. The rotations suggested for Orangeburg sandy loam may be used with as great success on this soil.

Ruston sandy loam, deep phase.—The deep phase of Ruston sandy loam is mapped in order to separate the typical soil from those areas having a much deeper mantle of sandy material over the subsoil. The deep phase has a topsoil varying from 20 to 30 inches in thickness. The surface layer, to a depth ranging from 2 to 6 inches, consists of grayish-yellow, gray, or brownish-gray loamy sand and is underlain by brownish-yellow or light-brown loamy sand or loose sandy loam. The subsoil is yellowish-brown or reddish-brown, friable sandy clay to a depth of 40 or 50 inches. The underlying material is similar to that under typical Ruston sandy loam.

This deep soil occupies slightly less-rolling positions than the typical soil, but surface drainage is good. Internal drainage is excellent, yet the subsoil is retentive of moisture. Considerable water-rounded quartz gravel, varying in diameter from one-eighth inch to 3 inches, occurs on the surface and throughout the soil in many places. These areas are shown on the soil map by gravel symbols. Locally these gravelly areas are called gravel beds or gravel pits and are considered of prime importance as road-building material. A commercial concern supplying gravel to road contractors is located on an area of this gravelly soil southeast of Garysburg. The gravel is washed free of the finer soil material, is graded in various sizes, and is shipped out in trainloads. Locally much gravelly material is used with good results on the roads.

Much less than half of the deep Ruston sandy loam is under cultivation. Forested areas are covered with a fair growth of pine, oak, hickory, and dogwood. Abandoned fields are grown up with loblolly or old-field pine. Cotton and corn are the principal crops. Yields are somewhat lower than on the typical soil.

Farming practices on this soil are similar to those on Orangeburg sandy loam. The greatest need of the soil is the incorporation of organic matter.

ORANGEBURG SANDY LOAM

The surface soil of Orangeburg sandy loam in virgin areas consists of gray or brownish-gray loamy sand from 2 to 4 inches thick. This grades into yellow or brownish-yellow loamy sand or loose sandy loam from 12 to 20 inches thick. The subsoil is bright-red, friable crumbly sandy clay which in many places continues to a depth of 10 or even 15 feet without any appreciable change in color, texture, or structure. Generally a thin upper layer in the subsoil represents the gradation from topsoil to subsoil. This layer, commonly from 3 to 6 inches thick, is yellowish-red friable sandy clay or heavy sandy loam. Beneath the deep and uniform subsoil is material which is varied in

character but which in many places is reddish-yellow or mottled red and yellow gravelly sandy material. Beds of sand, gravel, and loose sandy clay are found in some areas. In a few places on the more rolling areas near Vultare, Vultare School, Vincents Store, and Moody Store much of the deep surface mantle has been eroded, leaving a surface of brownish or reddish sandy loam which grades, at a depth ranging from 5 to 8 inches, into the red, friable sandy clay subsoil. In a few places the entire mantle of sandy loam has been removed in spots, leaving the red subsoil exposed. Locally small gravel or some coarse sand are scattered over the surface and throughout the soil. A few areas of Orangeburg fine sandy loam north of Camp Store and Gum Forks were included in mapping.

Orangeburg sandy loam occurs in the western part of the county between Camp Store and St. Lukes Church. The largest areas are between Vincents Store and Vultare, near Moody Store, and at Vultare School.

This soil occupies the highest general elevation of any soil in Northampton County. The surface varies from undulating to somewhat steep. The greater part of the soil, however, occupies gently rolling ridges. Both surface and internal drainage are good. Although the surface soil is open and porous, the subsoil is retentive of moisture, and crops rarely suffer from drought.

Although not of very great extent, Orangeburg sandy loam is a very important and productive agricultural soil in Northampton County. Probably 65 per cent of it is under cultivation. The timbered areas are covered with a fairly good growth of oak, pine, hickory, gum, and dogwood. This soil was one of the first to be developed in the section of the county in which it occurs. It is easily tilled under a wide range of moisture conditions and responds readily to careful treatment.

Cotton is the most important crop on this soil, but corn, peanuts, and grain and hay crops are also grown. Yields are almost as high as those obtained on the Greenville soils. Cotton produces from one-half to 1½ bales to the acre, corn from 20 to 40 bushels, and peanuts from 1,500 to 3,000 pounds. Small grains give good yields, and all the forage crops are grown successfully.

Although this soil is naturally highly productive it is not generally managed efficiently. The one-crop system has generally prevailed, although of recent years some systematic rotations including cotton, corn, small grains, and clover and other legumes have been followed. As a rule, however, cotton and peanuts or cotton and corn are planted alternately.

Cotton and corn are the fertilized crops on this soil. Cotton is given an acreage application varying from 500 to 1,000 pounds of 3–8–3, 4–8–4, or 3–9–3 fertilizer. The grade commonly used this year (1925) is 3–8–3. When peanuts follow cotton from 400 to 800 pounds to the acre of lime is applied before planting, and at blossoming time from 200 to 300 pounds of gypsum is applied as a top-dressing. Corn is given from 300 to 600 pounds to the acre of a 3–8–3 fertilizer or from 200 to 300 pounds of superphosphate if the crop follows clover.

The current selling price of this soil is from $40 to $100 an acre, the price depending generally on the location with reference to a good road and on the character of the improvements.

Orangeburg sandy loam needs organic matter to replace the supply lost through growing clean-cultivated crops exclusively. Such crops as clover, cowpeas, soy beans, vetch, oats, and rye, may be turned under for the purpose of supplying organic matter. Rotations including these crops should be followed. A good rotation for this soil, recommended by the North Carolina Agricultural Experiment Station, follows: First year, cotton, followed by rye sown in the fall and turned under in the spring; second year, corn, with cowpeas sown in it in July and followed by oats and vetch sown in the fall; and third year, peanuts, planted after oats and vetch have been turned under and followed by rye sown in the fall. Another recommended rotation is: First year, corn, with soy beans or cowpeas sown in it; second year, cotton, with rye or crimson clover and rye sown on the land after the first picking; third year, peanuts, with oats and vetch sown after the peanuts are harvested; and fourth year, oats and vetch cut for hay, followed by soy beans or cowpeas, and crimson clover seeded on the land in the fall, after soy beans or cowpeas are harvested or turned under.

GREENVILLE FINE SANDY LOAM

The surface soil of Greenville fine sandy loam is red, brown, or brownish-red and in places dark-red, heavy, fine sandy loam to a depth varying from 6 to 10 inches. In wooded areas the immediate surface soil may contain a very little vegetable mold. The subsoil is dark-red or red very heavy but friable fine sandy clay of uniform texture, color, and structure to a depth varying from 4 to 6 feet. The parent material is mottled red, yellow, and gray, hard but brittle light sandy material overlying beds of gravel, sand, and light sandy material. Some small areas of this soil approach loam in texture, and here the surface soil is of a darker color. On the more rolling areas considerable of the surface soil has been washed away, leaving the deep-red subsoil exposed in places.

The largest area of Greenville fine sandy loam is mapped south of Gum Forks. Other comparatively large areas are north of Camp Store and Shiloh Church, west of Oak Grove Church, southwest of Garysburg, and north of Roanoke Chapel. Small, isolated areas occur in the east-central part of the county. In the Gum Forks section, Greenville fine sandy loam occurs in somewhat close association with Orangeburg sandy loam.

The surface of Greenville fine sandy loam ranges from nearly level to rolling. The greater part of the soil occupies gently rolling ridges, somewhat more elevated than the surrounding soils,

The surface drainage is generally good, but only a few marked drainage ways have been developed over the greater part of the soil. Internal drainage is good, yet the subsoil is retentive of moisture. Crops very seldom suffer from drought on this soil. The surface in cultivated fields has a slight tendency to compact in dry weather, unless it is kept in a good state of tilth.

This soil is generally recognized as the strongest and most productive upland soil in the county. Practically all of it is under cultivation. It is easily tilled and is managed as well as any soil in the county. The chief crop is cotton. Corn, peanuts, grain, and clover are grown on much smaller acreages. Cotton yields generally average slightly more than a bale to the acre, but yields of 1½ or 2 bales are

not uncommon. Corn produces from 20 to 50 bushels and peanuts from 1,800 to 3,000 pounds to the acre.

The greater part of the Greenville fine sandy loam belongs to large landholders and is farmed under the tenant system. Ordinarily the soil is not managed with any more care than the other soils of the county, but it generally receives as careful preparation for the seed and as good cultivation. This soil will respond to careful management and cropping more than any soil in the county.

Although Greenville fine sandy loam is naturally a strong soil, fertilization is necessary for the crops commonly grown. Cotton is generally as heavily fertilized as on the less productive soils. When grown, peanuts are generally planted every third year, cotton being the intervening crop. The peanuts are not fertilized but receive heavy applications of lime before planting and a later top-dressing of gypsum.

Little or no land of this kind is offered for sale. It is valued at $100 or more an acre.

The greatest needs of this soil are the incorporation of organic matter and rotation of crops. Organic matter can be added by growing and turning under leguminous crops and winter cover crops, which may be grown in rotation with the cotton and peanuts. This soil is well adapted to the production of small grains. The rotations suggested for Orangeburg sandy loam may be used with equal success on this soil.

CUTHBERT FINE SANDY LOAM

In virgin areas the topsoil of Cuthbert fine sandy loam consists of gray or light-gray fine sandy loam, generally less than 2 inches thick, underlain by pale-yellow or grayish-yellow fine sandy loam or heavy fine sandy loam which continues to a depth varying from 5 to 10 inches. The upper part of the subsoil is tough, compact, reddish-yellow clay, which generally continues to a depth varying from 18 to 24 inches. The lower part of the subsoil is mottled light-red and yellow, tough, heavy, hard, compact clay which may extend to a depth of 50 or more inches. The parent material is mottled red and yellow, but some gray, friable sandy clay material is present. In many cultivated fields a large part of the surface soil has been washed off. The remaining soil is fine sandy clay loam, clay loam, and in spots clay in texture. In numerous galled spots the red or yellowish-red subsoil is exposed. In plowing, some of the subsoil becomes mixed with the surface soil, giving the soil a grayish-yellow or yellow, and, in some places, a reddish-yellow color. In abandoned areas which have largely grown up in pines the surface soil is yellowish or reddish.

Cuthbert fine sandy loam occurs mainly in the north-central part of the county. The largest areas are west and southwest of Pleasant Hill and along Ramsey Creek north of Piney Grove Church. The soil occurs chiefly on the slopes to the stream courses and on comparatively high ridges between the streams. The surface ranges from gently to strongly rolling. Natural surface drainage is good or excessive.

Cuthbert fine sandy loam is a comparatively important farming soil in Northampton County, and approximately 60 per cent of it is now under cultivation. The rest is forested with pine, oak, hickory, gum, maple, dogwood, holly, and some beech, birch, redbud, poplar, and elm. Abandoned areas have largely grown up in old-field pine.

Cotton, corn, and peanuts are the leading crops. Peanuts are grown only on the less rolling areas which have a deeper covering of fine sandy loam. Potatoes, vegetables, and fruits are grown for home use. Some small grains and clover are also grown. Cotton yields from one-fourth to 1 bale to the acre, corn from 15 to 40 bushels, and peanuts from 800 to 2,400 pounds. Cotton receives from 500 to 1,000 pounds to the acre of a 3–8–3, 4–8–4, or 4–9–4 fertilizer, and two later top-dressings of nitrate of soda, each at the rate of 100 or 200 pounds to the acre. Corn receives from 300 to 400 pounds to the acre of a 2–8–2 or 3–8–3 fertilizer and a top-dressing of from 75 to 150 pounds of nitrate of soda. Peanuts are heavily limed and are given a top-dressing of gypsum but generally receive no regular fertilization.

The current selling price of land of this kind ranges from $25 to $100 an acre, depending on the location with respect to towns and good roads and on the character of the improvements.

Cuthbert fine sandy loam is a good, strong soil and one that is capable of being built up and maintained in a high state of productiveness under proper management. Deep plowing, proper preparation of the seed bed, and the incorporation of organic matter by turning under such crops as clover, oats, vetch, or rye, are recommended. The growing of winter cover crops is essential on the more rolling areas to prevent erosion, which readily takes place during the winter. Badly eroded areas should be terraced to prevent further erosion and should be sown to cover crops each fall or abandoned and left to grow up in pines. Grasses might be sown and such areas used as pasture lands. This soil is a difficult one to till. Heavier work animals and implements are generally needed than on the other soils in the sections in which this one occurs. Plowing and cultivation can be done only under a rather narrow range of moisture conditions. If plowed or tilled when too wet, the soil will become cloddy and bake, and if plowed when too dry it can not be broken with the average work animals and implements. The incorporation of organic matter would help greatly to remedy this condition. Rotations including winter cover crops to be turned under in the spring should be followed. The rotations recommended for Norfolk fine sandy loam are applicable to Cuthbert fine sandy loam.

DUNBAR VERY FINE SANDY LOAM

The surface layer of Dunbar very fine sandy loam is grayish-brown or dark-gray very fine sandy loam from 2 to 4 inches thick. It is underlain by grayish-yellow or pale-yellow, heavy very fine sandy loam 8 or 10 inches thick. The typical subsoil consists of two layers, an upper layer of yellow, rather heavy friable clay continuous to a depth varying from 18 to 24 inches and a lower layer of mottled red, yellow, and light-gray, heavy, tough, and in places slightly plastic clay which continues to a depth of 40 or 50 inches. Locally there is some variation in the abundance of red mottles in the lower part of the subsoil, and in a few places the gray color is very pronounced. The underlying material is mottled light-yellow, red, and gray, friable very fine sandy loam. In heavily wooded areas where there is a noticeable accumulation of leaf mold the immediate surface may be very dark brown or nearly black. In cultivated areas the surface soil, to a depth varying from 5 to 7 inches, is light-gray or grayish-yellow very fine sandy loam, depending on the percentage and char-

acter of the organic matter present and the depth of plowing. A few spots of Dunbar silt loam were included in mapping but, in general, the soil is uniform throughout.

Dunbar very fine sandy loam is widely distributed throughout the county east of a line passing through Brewers Crossroads and Lebanon School but is most extensive in the flatwoods or southern section of the county. It generally occurs in comparatively small areas. The largest area, some 2 square miles in extent, is 3 miles southwest of Jackson. Other comparatively large areas occur along Potecasi Creek.

The surface of this soil is generally flat or undulating. Drainage is retarded by the level surface and the compact lower subsoil layer, but in the sections where the soil is most typical it is fairly well drained. In the flatwoods section of the county this is an important farming soil. About 30 per cent of its total area is tilled. The uncleared areas support a good growth of pine and scattered oak, hickory, sweet gum, and maple, and an undergrowth of gall berry bushes. Ditches are necessary over the greater part of this soil to furnish adequate drainage in cultivated fields.

The principal crops are cotton, corn, and peanuts. Garden vegetables, potatoes, and fruits are grown for home consumption. Rye, oats, and crimson clover are sometimes grown for early spring feed, being pastured or cut for the hay. Soy beans, cowpeas, and bur clover are also grown on small acreages. Good yields are obtained in average seasons. This soil warms up slowly in the spring and can not be cultivated under a wide range of moisture conditions on account of its tendency to clod when plowed too wet and to bake after summer rains if it is not tilled soon enough. The soil is generally deficient in organic matter.

Cotton yields from one-third to 1 bale to the acre, corn from 12 to 35 bushels, and peanuts from 600 to 2,000 pounds.

Peanuts are not generally fertilized but are heavily limed. Cotton is given from 600 to 1,200 pounds to the acre of a 3–8–3 or 3–9–3 fertilizer and corn from 300 to 400 pounds of a 2–8–2 grade. All available stable manure is applied.

The current selling price of this land varies from $25 to $100 an acre, depending on the nearness to towns and good roads.

Better drainage and an increased organic-matter content are the greatest needs of this soil. There is generally sufficient slope to enable the use of open ditches with moderate expenditure of money and labor. Crops may be grown profitably without the use of artificial drainage, but good drainage insures higher yields. The growing of leguminous crops would add much-needed nitrogen to the soil. Cover crops of small grain may be grown profitably.

Dunbar very fine sandy loam, well-drained phase.—The well-drained phase of Dunbar very fine sandy loam occurs throughout the south-central part of the county between Rehoboth and Bryantown on the west and Potecasi, Woodland, and Hertford County on the east. It closely resembles Dunbar very fine sandy loam and Marlboro very fine sandy loam. It occurs in close association with Dunbar very fine sandy loam, in the same relative position as Marlboro very fine sandy loam. It also resembles the Marlboro soil in that the yellow clay subsoil is near the surface. The surface soil is yellow or rather pale grayish-yellow heavy very fine sandy loam, generally only from

3 to 6 inches thick. The upper layer of the subsoil is more compact yellow clay than that of the typical soil and is somewhat tough. The lower part of the subsoil is yellow, tough, and somewhat compact clay, containing less of the red and gray mottling so characteristic of the typical soil.

This is considered the most desirable soil throughout the section in which it occurs, on account of its good natural surface drainage. Practically all of it is cultivated. It occupies ridgelike areas which in places resemble broad and slightly flattened hummocks. Percolation of the rain water is poor, owing to the heaviness and toughness of the subsoil, but generally the run-off to lower soils insures the removal of excess water.

This is a strong soil. Fields that have been planted continuously to cotton for as long as 50 years are still producing average yields of one-half or three-fourths bale to the acre. Corn and peanuts also give excellent yields, but cotton is the most generally grown crop. Tractors are used on some of the farms for breaking the soil. From 600 to 1,200 pounds to the acre of a 4–8–4 or 4–9–4 fertilizer is generally used, with later top-dressings of nitrate of soda at the rate of 100 or 200 pounds to the acre when the crop is first chopped and from 75 to 150 pounds when the crop is laid by in July. When peanuts are grown, no fertilizer is used, but lime and gypsum are applied. All available stable manure is used.

As the result of continuous clean cropping with no return of vegetable matter, this soil probably contains less organic matter than any soil in the county, except the fine sands. The incorporation of large quantities of organic matter would result in a more open and more easily tilled soil and in a subsoil that would be more retentive of moisture. Suggestions for the improvement of Cuthbert fine sandy loam can also be applied to this phase of Dunbar very fine sandy loam.

DUNBAR FINE SANDY LOAM

The surface layer of Dunbar fine sandy loam is gray or dark-gray loamy fine sand or fine sandy loam, to a depth of 2 or 4 inches, and is underlain by grayish-yellow or pale-yellow heavy fine sandy loam to a depth varying from 8 to 12 inches. The upper layer of the subsoil is yellow friable clay or fine sandy clay which is underlain, at a depth of 20 or 30 inches by mottled yellow and light-gray and, in some places, bright-red, heavy, tough clay, which may continue to a depth varying from 38 to 50 or more inches. In places the bright-red mottles may be greatly modified, only faint splotches of red showing. The parent material is mottled light-gray and yellow friable fine sandy clay loam, in which are splotches of red. In places the material is mottled light gray and yellow, with streaks or mottles of bright red. In some heavily wooded areas the surface soil is very dark gray or almost black when moist. In plowed areas the surface layer, to a depth of 6 or 8 inches, is light-gray, pale-yellow, or grayish-yellow fine sandy loam, the color depending on the quantity and character of the organic matter present and the depth of plowing.

Dunbar fine sandy loam occurs in small areas in all parts of the coastal-plain region of the county. It generally occurs as flats on broad interstream areas throughout the northern half of the county, whereas in the southern part it generally occupies higher areas and is better drained than the surrounding soils. The surface varies from

nearly flat to gently rolling. Surface drainage is poor in the northern part of the county, as the surrounding soils occupy a higher position, but the reverse is generally true in the southern part, where water runs off to the lower, surrounding soils. Internal drainage is not good, owing to the compactness and comparative imperviousness of the lower part of the subsoil. Ditching is required, however, over most of the soil to obtain adequate drainage in cultivated fields.

Although this soil is more widely distributed than any other in the county, it is not important agriculturally. Only in the southern part of the county have any fair-sized areas been brought under cultivation. In the northern part practically all of the soil is covered with the original forest of pine, oak, sweet gum, and scattered hickory and dogwood. The undergrowth, which is very dense in places consists of gall berry and service berry bushes, and briers. Probably less than 20 per cent of the soil is farmed.

The leading crops are cotton and corn. Yields average somewhat lower than on Norfolk fine sandy loam. The soil is given practically the same fertilizer treatment and is managed in about the same manner as Dunbar very fine sandy loam.

Selling prices are generally determined by the value of the timber on the land. Commonly the cultivated areas are small on the individual farms.

LUFKIN VERY FINE SANDY LOAM

The 1-inch or 2-inch surface layer of Lufkin very fine sandy loam, in its natural state, consists of light-gray or gray very fine sandy loam. It is underlain, to a depth varying from 7 to 10 inches, by pale yellowish-gray or light grayish-yellow, heavy, very fine sandy loam. The subsoil is brownish-yellow or dull-yellow, heavy, tough, compact clay which continues to a depth varying from 10 to 20 inches. The underlying parent material, to a depth ranging from 4 to 6 feet, is light-gray, slate-gray, or drab-gray heavy, tough, plastic clay or silty clay streaked with rust brown. Beneath it is gray and rust-brown sandy clay material. When moist, or in heavily wooded areas, the surface soil is gray or dark gray in color. In cultivated fields the surface soil to a depth of a few inches may be almost yellow or light grayish yellow, with some spots of rust brown on the more sloping areas. The subsoil may vary in thickness from place to place but generally does not extend to a depth greater than 32 inches. In many places the subsoil is gray.

Lufkin very fine sandy loam is the most extensive soil in the southern part of the county. The largest areas occur south of Rich Square and southwest of Jackson. Smaller areas are along Occoneechee Creek, Urahaw Swamp, and Roanoke River. The soil occupies interstream areas and the gentle slopes approaching the streams. The surface on the interstream areas is level or slightly rolling, whereas that along the stream slopes is generally rather broken. The run-off is poor except along the stream courses, and internal drainage is inadequate on account of the imperviousness of the subsoil. Ditching is necessary for successful cultivation over the greater part of the soil.

This is an important soil agriculturally, and approximately 60 per cent of it is farmed. The remainder is forested, principally with white oak, post oak, and pine, with scattered hickory, holly, and other

hardwoods. Locally this soil is called white-oak land, as the white oak is more common than any other tree. The chief crops grown are cotton and corn. Peanuts are extensively planted in a few sections. Potatoes, garden vegetables, melons, and fruits are produced chiefly for home use. Oats, rye, crimson clover, soy beans, and cowpeas are grown by some farmers for feed. Oats and rye are frequently cut in the milk stage and fed to the livestock.

Cotton yields from one-fourth to 1 bale to the acre, corn from 10 to 35 bushels, peanuts from 1,000 to 2,500 pounds, and crimson clover from 1 to 1½ tons of hay.

From 800 to 1,200 pounds to the acre of a 3–8–3, 4–8–4, 4–9–4, or 4–10–4 fertilizer is applied to cotton fields, with a later application of one or two top-dressings of nitrate of soda in quantities ranging from 100 to 200 pounds to the acre each. Corn receives from 200 to 400 pounds to the acre of a 2–8–2 or 3–8–3 fertilizer, and usually a top-dressing of 50 or 100 pounds of nitrate of soda. In growing peanuts the soil is heavily limed, and the plants are treated with land plaster or gypsum.

Lufkin very fine sandy loam is a very difficult soil to manage. It requires heavy work animals and implements and can be worked only under a narrow range of moisture conditions. However, this soil is as well farmed as any soil in Northampton County and with greater care than most of the better-drained soils. Fields are broken in the spring as early as possible and are later plowed and harrowed or disked before the crops are planted. Tractors are used on a number of farms in preparing the seed bed. A very little fall plowing is done, and a few farmers turn under crops of rye, oats, or clover sod. Plant rows are generally made flat, and the usual practice of ridging is followed in subsequent cultivations, the crops being laid by on a rather prominent ridge. This is done largely to facilitate drainage after heavy summer rains. Crimson clover is grown with considerable success, especially when it follows peanuts, a heavily limed crop.

Values of this soil have a wide range, depending on the location with respect to towns and good roads as well as the state of improvement. From $15 to $125 an acre is asked, but the average price is about $75.

Lufkin very fine sandy loam, like the other heavy soils of the county, can be greatly benefited by turning under green-manure crops. Not only does this increase the content of organic matter, but it results in a more open and easily tilled soil and facilitates percolation of moisture. Somewhat deeper plowing each year would also prove beneficial.

LUFKIN SILT LOAM

The surface layer of Lufkin silt loam is gray or dark-gray silt loam 1 or 2 inches thick and is underlain by pale grayish-yellow silt loam, very slightly mottled with rust brown, which continues to a depth varying from 5 to 8 inches. The subsoil is mottled drab-gray and brownish-yellow, heavy, tough silty clay or clay. The parent material is mottled drab-gray, red, and brownish-yellow heavy, tough, plastic silty clay between depths of about 24 and 45 inches and is underlain by mottled gray and brown sticky sandy material.

Lufkin silt loam occurs in the southern part of the county, mainly south of the road from Bryantown through Rich Square to Eagletown.

The largest areas are southeast of Bryantown and south of Eagletown. The soil occupies rather broad interstream areas and slopes approaching streams. The surface is level or undulating, becoming more rolling near the streams. Surface drainage is generally poor, and internal drainage is very poor on account of the imperviousness of the subsoil.

This is an unimportant agricultural soil in Northampton County. Practically none of it is under cultivation. White and post oaks are the characteristic growth. Pines and scattered hardwoods occur on many areas.

The current selling price of this land varies from $15 to $50 an acre, depending largely on the character and value of the timber.

Lufkin silt loam, if adequately drained, has about the same agricultural value as Lufkin very fine sandy loam. It is used in adjoining counties for the production of cotton and corn. It is more difficult to drain than Lufkin very fine sandy loam and is somewhat harder to cultivate, owing to its heavier texture.

COXVILLE FINE SANDY LOAM

In wooded areas the surface 2-inch or 3-inch layer of Coxville fine sandy loam is gray or very dark-gray fine sandy loam. Beneath it is pale yellowish-gray or faintly brownish-gray heavy fine sandy loam which continues to a depth varying from 7 to 10 inches. The upper part of the subsoil is mottled light-gray and brownish-yellow, heavy, plastic clay underlain, at a depth varying from 18 to 24 inches, by mottled light-gray, yellow, and bright-red, heavy plastic clay which continues downward to the parent material of light-gray heavy plastic clay mottled with yellow. This layer generally occurs at a depth ranging from 45 to 60 inches. In cultivated areas the surface is gray or yellowish-gray fine sandy loam to a depth ranging from 5 to 8 inches. The color depends on the quantity and character of the organic matter present and on the depth of plowing.

This soil occurs throughout the northern part of the county, east of the piedmont plateau. It generally occurs in small areas, commonly as depressions in the higher surrounding soils, and the run-off and internal drainage are poor. The largest areas are in the vicinity of Ashley Grove Church and west of Grants Store.

Practically none of this soil is cultivated, the greater part being forested largely with pine. A few sweet gum trees and other scattered hardwoods are growing on some areas. Generally there is a rather dense undergrowth of gall berry bushes and briers. Corn and cotton are grown to some extent. Corn yields from 10 to 25 bushels to the acre and cotton from one-fourth to one-half bale. Oats are grown in a few places with fair results.

This soil needs good drainage before it can be profitably farmed. It can be made more productive by deeper plowing and liming. In other counties of the State it is used for the production of strawberries and potatoes, as well as for corn and cotton.

COXVILLE VERY FINE SANDY LOAM

Coxville very fine sandy loam has a dark-gray or gray heavy fine sandy loam surface layer from 2 to 4 inches thick. This grades into light-gray or very slightly yellowish-gray, heavy, very fine sandy loam

which continues to a depth ranging from 6 to 9 inches. The upper layer of the subsoil is mottled light-gray and brownish-yellow, heavy, plastic clay, which merges, at a depth ranging from 16 to 24 inches, with mottled light-gray, yellow, and bright-red, heavy, plastic clay. The parent material is light-gray, heavy, plastic clay mottled with yellow. In cultivated areas the dry surface soil, to a depth varying from 4 to 6 inches, is light gray or ash gray, depending on the quantity of organic matter present. In some places where the land has long been cleared and subjected to leaching under clean cultivation it approaches fine sandy loam in texture. The broad, flat, uncleared areas which are wet the greater part of the year are locally known as pocosins or swamps. The soil is soft and miry during the winter months, but on drying in the spring and summer it becomes hard and packs. It is acid in reaction.

Coxville very fine sandy loam is extensive in the southern part of the county, principally in the section lying between Jackson and Woodland on the north and Bryantown and Eagletown on the south. The largest areas are south of Jackson, north of Rich Square, and northwest of Lasker. The surface is level or flat, and many areas occupy depressions or basins. Slopes to the stream courses are long and gentle. Both surface drainage and underdrainage are deficient, and the flatter areas are water-logged during rainy seasons. The imperviousness of the subsoil prevents free downward movement of water.

This is a strong soil, and a large part of it is under cultivation in the Rich Square section. Probably 15 per cent of the total area in the county is under cultivation. The forest growth consists of pine, oak, hickory, sweet gum, maple, black gum, and holly. The undergrowth is largely gall berry and briers. The greater part of the cultivated areas is devoted to corn and cotton. Peanuts are also grown, as well as some oats, rye, and crimson clover. Yields of cotton range from one-third to 1 bale to the acre, of corn from 15 to 35 bushels, and of peanuts from 1,000 to 2,400 pounds.

This soil is not cultivated without artificial drainage. Liming is generally necessary for all the crops grown. In general, the farming practices are as good as on the better-drained soils. The soil warms up slowly in the spring and can be plowed and cultivated only under a very narrow range of moisture conditions. However, it is generally kept in a very good state of tilth. On a few farms tractors are used, and the fields are rather deeply broken with heavy plows. Some farmers plant cowpeas and soy beans in the corn, and a number grow small fields of crimson clover and turn the sod under after cutting the clover in the spring. Fertilizer applications are not generally so heavy on this soil as on Lufkin very fine sandy loam. Cotton usually receives from 600 to 900 pounds to the acre of a 4–8–4 or 4–9–4 fertilizer, and corn from 300 to 500 pounds of a 2–8–2 grade. Peanuts are heavily limed but do not receive commercial fertilizer.

The selling price of land of this kind ranges from $10 to $100 an acre, the higher prices prevailing near the towns and good roads.

More of this soil could profitably be farmed if it were properly drained and heavily limed. The growing of green-manure crops and their incorporation in the soil would aid in its aeration and increase its productiveness.

COXVILLE SILT LOAM

The 3-inch or 4-inch surface layer of Coxville silt loam in forested areas is gray or very dark-gray silt loam. It is underlain, to a depth of 6 or 8 inches, by light-gray or yellowish-gray heavy silt loam mottled with rust brown. The upper part of the subsoil is mottled light-gray and yellow, heavy, plastic silty clay or clay to a depth of 15 or 20 inches, where it grades to more heavy, impervious, plastic, mottled light-gray, yellow, and bright-red clay which extends to a depth varying from 28 to 42 inches. The parent material is light-gray, very heavy, plastic clay mottled with yellow. In the more poorly drained areas the surface soil approaches silty clay or clay in texture and has an almost black color which becomes very dark gray on drying.

Coxville silt loam occurs throughout the coastal plain of the county but is most extensive in the southern part. The largest areas are southeast of Rich Square, south and southeast of Woodland, southwest of Rehoboth, and north of Eagletown. Areas of this soil are generally locally referred to as pocosins and occupy nearly flat, level areas or basinlike depressions in which drainage channels are only partly developed. Where the soil occurs near small streams the relief may be very slightly undulating, although the slopes approaching streams are generally very gradual. Both surface drainage and underdrainage are very poor. Water covers the soil throughout the winter and early spring months and, unless the areas are artificially drained, remains on the surface for days in summer following heavy rains. Although some streams head within this soil they have such sluggish currents that they are not effective in removing the excess water.

Practically none of the Coxville silt loam is under cultivation. The greater part of it is covered with a fair or good growth of pine and a few scattered sweet gum, white oak, and maple trees. Cut-over areas have largely grown up in old-field pine. Over much of the wooded areas there is a dense undergrowth consisting of gall berry and bay bushes and briers. This land is generally held in large tracts. On account of its poorly drained condition, there is no demand for it for farming.

Soil of this type has been reclaimed successfully and farmed in other counties of the State. Drainage of the soil in Northampton County is practicable, but the enormous expense of maintaining long and deep ditches and numerous laterals, and the tile draining of most areas, would probably not be justified by the returns from farming. The money and energy thus expended could far better be used in farming a better-drained soil which would justify the labor and expense by greatly increased yields. The best use of Coxville silt loam is as forest land.

WICKHAM LOAM

The surface layer of Wickham loam in untilled areas is dark-brown loam or heavy very fine sandy loam to a depth varying from 2 to 4 inches. This is underlain by brown heavy loam which continues to a depth varying from 7 to 9 inches. The subsoil is reddish or yellowish-brown heavy but friable clay, from 30 to 45 inches thick, which grades into mottled yellow and gray, streaked with dark rust-brown, friable very fine sandy clay material. Both surface soil and

subsoil contain a few fine mica scales. Over a large part of the long-cultivated areas of this soil there is a thin covering of fine or very fine sandy loam of a light grayish-brown color. After years of clean tillage the finer material has concentrated in the subsurface layer, leaving a thin mantle of coarser material on the surface. Numerous spots of red or reddish-brown loam or clay loam occur throughout the soil, where the subsoil is exposed after the greater part of the surface soil has been removed, partly by wind erosion and partly by washing.

Wickham loam is the most extensive terrace soil in Northampton County. It is most typical along Roanoke River in Occoneechee Neck and south of Bryantown. Small areas are along Meherrin River. Its general occurrence is in large and fairly uniform areas. The relief varies from flat to undulating, with locally a few small knolls, together with low, flat ridges, and intervening shallow, trough-like depressions. Drainage is generally good, and practically all of the soil lies above the highest flood stage.

This soil is regarded as one of the strongest farming soils in the county. Practically all of it is under cultivation, almost wholly to cotton, although some corn is grown on a few areas. In Occoneechee Neck and the lower Roanoke River sections cotton has been grown on most fields continuously since the Civil War. A few patches are occasionally devoted to soy beans, cowpeas, or clover and small grains, all of which are grown for feed. Cotton produces, in an average season, nearly 1 bale to the acre, the range being from one-half to 1½ bales. Corn produces from 20 to 40 bushels to the acre. Cotton is ordinarily fertilized with from 600 to 1,200 pounds to the acre of a 4–8–4 or 4–9–4 grade and two later top-dressings of nitrate of soda in quantities varying from 100 to 200 pounds to the acre each.

The greater part of the Wickham loam is held by large landholders and is farmed by colored tenants. The years of continuous cropping to a clean-cultivated crop has left the soil largely depleted of organic matter, and it has a decided tendency to harden and bake soon after rains. It can be improved by turning under such crops as rye, oats, cowpeas, and clover, and by liberal applications of barnyard manure. When green crops are turned under it is advisable to apply lime heavily. Winter cover crops of rye, oats, and vetch, or crimson clover, can be grown for green manure in the spring, and the usual crop of cotton can be grown in the summer. The incorporation of organic matter and deeper plowing will result in increased yields of cotton with less fertilization. The soil will have less tendency to compact and will be more retentive of moisture and, at the same time, better aerated.

WICKHAM FINE SANDY LOAM

In areas of virgin soil Wickham fine sandy loam has a brown surface layer of mellow fine sandy loam which, at a depth of 2 or 3 inches, grades into light-brown fine sandy loam which continues to a depth varying from 10 to 14 inches. The subsoil, to a depth ranging from 30 to 50 inches, is yellowish-red friable clay which is underlain by reddish-yellow friable fine sandy clay or fine sandy loam. Both layers of the subsoil contain varying quantities of finely divided mica scales. In cultivated fields the surface soil, to a depth ranging from 5 to 8 inches, is reddish or brownish red, with spots of gray or grayish

red, the color depending largely on the depth of plowing and the quantity of organic matter present.

Wickham fine sandy loam occurs only in second-bottom or terrace areas along Roanoke and Meherrin Rivers. The largest area is south of Bryantown. The surface is prevailingly level or gently undulating. Drainage is good, and the soil lies well above overflows.

All of this soil is under cultivation. Cotton, the principal crop, yields from one-third to 1 bale to the acre. Corn and peanuts are grown to a very small extent. Corn yields from 20 to 40 bushels and peanuts from 1,500 to 2,500 pounds to the acre. This soil is managed in the same manner as is Wickham loam.

WICKHAM LOAMY SAND

Wickham loamy sand consists of dark-brown loamy medium sand to a depth varying from 8 to 12 inches. This layer is underlain by brown or golden-brown slightly loamy sand which grades, at a depth of 20 or 24 inches, into loose, incoherent sand of a faintly reddish-yellow color. In cultivated areas the surface soil is light brownish-yellow, rather loose sand, owing to the leaching out of the organic matter.

This soil occurs mainly in ridgelike areas lying next to the first-bottom lands along Roanoke and Meherrin Rivers. The largest areas are near Princeton, along Meherrin River. The surface is rolling or hummocky, and the soil, in general, occupies a higher position than the surrounding soils. Drainage is excellent, and percolation is excessive, owing to the openness and porosity of both surface soil and subsoil. Generally the soil is rather droughty.

Wickham loamy sand is of small extent, but practically all of it is under cultivation. The chief crop is corn, although cotton is grown on a few areas, and near Princeton some peanuts are grown. Corn yields from 8 to 15 bushels, cotton from one-fourth to one-third bale, and peanuts from 600 to 1,000 pounds to the acre.

This soil is managed much as is Wickham fine sandy loam and can be improved in the same way.

CECIL FINE SANDY LOAM

The surface soil of Cecil fine sandy loam is light yellowish-gray or brownish-yellow, heavy fine sandy loam to a depth of 6 or 8 inches. The upper layer of the subsoil is yellowish-red or very slightly mottled yellow and red, heavy, brittle fine sandy clay which grades, at a depth varying from 12 to 15 inches, into deep-red, stiff, brittle clay continuous to a depth varying from 40 to 60 inches. This grades into yellowish or grayish friable material or the partly decomposed rock. A few fine mica scales and coarse quartz sand grains are distributed throughout the subsoil. In a few places white quartz fragments appear on the surface, and in some places outcrops of the bedrock may be seen.

Included with this soil in mapping are some spots of Cecil sandy loam. In cultivated fields the surface soil is reddish brown or grayish yellow. On the more rolling areas considerable of the surface material has been eroded, leaving clay loam.

Cecil fine sandy loam occurs in the piedmont plateau section of the county, near the Warren County line. The largest area is west

of Tillars Chapel. The soil occupies ridges and gentle slopes. The surface is gently rolling or rolling. Owing to the porous surface and rolling relief the soil is well drained.

Cecil fine sandy loam is well adapted to the production of general farm crops, fruits, potatoes, and vegetables. About one-fourth of it is under cultivation. The forest growth on the uncleared areas consists largely of various oaks, hickory, and shortleaf pine with scattered dogwood, maple, and cedar. Abandoned fields have largely grown up in old-field pine. The principal crops are cotton and corn. Small grains are produced to a small extent. Vegetables, fruits, and potatoes are grown for home consumption.

Cotton yields generally average less than one-half bale to the acre. Corn yields range from 10 to 25 bushels, averaging about 14 bushels.

Cotton is generally fertilized with a 2–8–2 or a 3–9–3 mixture. Other crops are not given definite fertilization as a rule. Some rotation of crops is practiced. The soil needs organic matter, lime, and deeper plowing.

Land of this kind brings from $20 to $50 an acre, depending on the state of improvement.

CECIL CLAY LOAM

Virgin Cecil clay loam has a brown or slightly reddish-brown loamy surface layer, underlain by reddish-brown, heavy clay loam which continues to a depth varying from 5 to 7 inches. The subsoil of red, heavy, stiff but brittle clay extends downward to the parent soil material, which occurs at a depth varying from 30 to 50 or more inches. In cultivated areas the surface soil is generally more shallow and redder in color. Mica flakes and quartz sand grains are present in the subsoil in many places, and a few outcrops of the bedrock occur in places on the steeper slopes.

Cecil clay loam occurs in the piedmont plateau section of the county west of the abandoned Roanoke Railway. The largest area is mapped along Jimmies Run and Double Branch. Smaller areas occur along Pea Hill Creek and Roanoke River.

Areas of Cecil clay loam are prevailingly rolling or strongly rolling and broken. Natural drainage over all of the soil is good or excessive.

Nearly half of the Cecil clay loam has at one time been cleared and cultivated. At present probably one-third of it is under cultivation. The forest growth consists of various oaks, pine, hickory dogwood, and some maple, cedar, and locust. The principal crops are corn and cotton, but some wheat and rye are produced. Corn yields from 10 to 25 bushels to the acre, cotton from one-fourth to three-fourths bale, and wheat from 6 to 12 bushels. Potatoes, vegetables, and apples are produced for home use.

Cotton is generally fertilized with from 400 to 600 pounds to the acre of a 2–8–2 or a 3–9–3 grade. As a rule the other crops are not fertilized.

The selling prices of Cecil clay loam range from $20 to $60 an acre, the price depending largely on the state of improvement.

This soil can be built up to a high state of productiveness by deeper plowing, liming, growing clover or other legumes, and by

rotating crops. The more rolling and broken areas can better be utilized as pasture land or left to grow up in pines.

APPLING FINE SANDY LOAM

In virgin areas the surface layer of Appling fine sandy loam is gray fine sandy loam from 1 to 3 inches thick. It is underlain, to a depth of 6 or 8 inches, by grayish-yellow or yellow heavy fine sandy loam. The upper layer of the subsoil is yellow or faintly reddish-yellow, friable fine sandy clay to a depth varying from 12 to 16 inches, and the underlying layer consists of mottled light-red and yellow, hard but brittle clay. The lower part of the subsoil may be salmon colored and not show distinctly the red and yellow mottling, but it is in no place decidedly red. Mottled gray, light-red, and yellow friable material occurs at a depth varying from 35 to 50 or more inches, and this passes into the soft rock at a depth between 5 and 10 feet. The subsoil in places may contain a large quantity of quartz sand.

A few small areas of Durham fine sandy loam are included with Appling fine sandy loam in mapping. This soil has a light-gray or yellow surface soil and a yellow, friable clay subsoil. The largest spots of Durham fine sandy loam are mapped northeast of Webb School, along the Virginia State line. Small included areas of Appling sandy loam do not differ appreciably in agricultural value from the typical soil.

Appling fine sandy loam occurs in the northwestern corner of the county, west of the old Roanoke Railway. The largest area is northeast of Henrico School, extending to the Virginia State line.

This soil occurs on the broad interstream ridges and on the more gentle slopes to the stream courses. The relief varies from undulating to rolling and in places to strongly rolling. Both surface drainage and underdrainage are well established, but the subsoil is retentive of moisture. In some places on the steeper slopes the soil is somewhat eroded, leaving a surface soil of fine sandy clay texture and of spotted yellow and gray color.

Appling fine sandy loam is not an important agricultural soil in the county, on account of its small extent. Considerably more than half of it is under cultivation, principally to cotton and corn. Other crops sometimes grown are wheat, rye, oats, clover, and cowpeas. Potatoes, garden vegetables, and some fruits are produced on all farms for home use. The uncleared areas support a forest growth of oaks, hickory, shortleaf pine, and some dogwood, persimmon, poplar and cedar.

Cotton generally yields from one-third to two-thirds bale to the acre, corn from 10 to 25 bushels, and wheat from 8 to 12 bushels. Fertilizers are generally used on cotton, the average application being about 500 pounds to the acre of a 3–8–3 or 3–9–3 grade.

The current selling price of this land ranges from $20 to $60 an acre, the price asked depending largely on the state of improvement.

This soil is deficient in organic matter, which can be supplied by plowing under such crops as rye, oats, cowpeas, or clover. Deeper plowing should also be practiced. The soil is well adapted to the production of cotton, clover, potatoes, vegetables, peaches, and other fruits. In other sections of the State, it is considered one of the best bright-leaf tobacco soils.

GEORGEVILLE SILTY CLAY LOAM

In Georgeville silty clay loam there is no sharp line of demarcation between the topsoil and subsoil. The 1-inch or 2-inch surface layer is brown silt loam and is underlain, to a depth varying from 5 to 9 inches, by a layer of salmon-colored, reddish-brown, or light-red silty clay loam. The subsoil is very dark-red or maroon-red heavy silty clay, continuous to a depth varying from 15 to 100 inches, where the partly weathered soft slate from which the soil is derived occurs. This rock material is mottled light red and yellow or streaked light gray, yellow, and purplish red. When moist both surface soil and subsoil have a slight purplish cast. This is not a uniform soil. In a few places fragments of slate are scattered over the surface, and some outcrops of this rock are seen. On the less rolling areas the soil has weathered deeply, whereas along the steeper slopes adjacent to Roanoke River numerous outcrops of slate and bowlders occur. These stony areas are shown by stone symbols on the soil map.

Georgeville silty clay loam occurs in the northwestern corner of the county along Roanoke River and some of its tributaries. The relief is rolling or very steep and broken. Drainage is well established and on the steeper slopes is excessive, resulting in badly eroded areas.

The forest growth on Georgeville silty clay loam consists of various oaks, hickory, poplar, elm, sycamore, shortleaf pine, dogwood, and cedar. Some of the cleared areas are in pasture. Only a very small percentage of the soil is cultivated. The principal crops are corn and cotton.

This is an unimportant soil on account of its small extent and broken surface. The greater part of it should be utilized as pasture land or allowed to grow up in pines. It is generally sold with the other soils of the farm.

BRADLEY SANDY LOAM

The surface layer of virgin Bradley sandy loam consists of gray loamy sand 2 or 3 inches thick. This is underlain by yellowish-gray or light-gray sandy loam which continues to a depth varying from 8 to 30 inches. In a few places a third layer, consisting of moderately heavy, friable reddish-yellow sandy loam, continues to a depth varying from 18 to 30 inches. The subsoil is red, moderately stiff but brittle clay, which commonly contains more or less finely divided mica and a small percentage of angular quartz sand. In a few areas the silty clay subsoil is maroon red or purplish red. Partly weathered parent material occurs at a depth varying from 40 to 60 or more inches. The underlying rocks are granite, gneiss, schist, and slate. A small quantity of rounded quartz gravel or coarse sand is present in the soil in a few places.

The Bradley series represents an overlapping of the sandy coastal-plain material on the residual clays of the piedmont plateau. It represents a soil condition rather than definitely well-developed soil types. The subsoil of Bradley sandy loam belongs largely to the Cecil series, in which a few small areas of Georgeville silty clay loam occur. The surface soil belongs to the Norfolk series. On the steeper slopes a part of the surface covering of sand has been eroded, leaving the red clay subsoil exposed in a few places. In cultivated

fields the color of the surface soil ranges from gray through yellowish gray to yellowish red, depending largely on the thickness of the soil and the depth of plowing.

Bradley sandy loam occurs in small areas from the extreme northwestern corner of the county eastward to the Atlantic Coast Line Railroad. A large percentage of the soil occupies slopes to streams and has a decidedly rolling or hilly surface. Farther back from the streams, the surface is undulating or gently rolling. Drainage is very good or excessive.

On account of its small extent and generally broken surface, Bradley sandy loam is not important in the agriculture of the county. Probably about 15 per cent of it is under cultivation. The forest growth consists of oaks, pine, hickory, and some dogwood, poplar, and cedar. Cotton and corn are the principal crops. Cotton yields from one-fourth to one-half bale to the acre and corn from 10 to 20 bushels. Cotton is given the same fertilizer treatment as on the Cecil soils.

This soil can be improved by the methods suggested for Appling fine sandy loam. It is valued between $10 and $50 an acre.

Bradley sandy loam, gravelly phase.—The gravelly phase of Bradley sandy loam is separated from the typical soil on the basis of the content of gravel. In the gravelly phase the surface is thickly strewn with water-rounded quartz gravel varying in diameter from that of a pea to 2 or 3 inches. Varying quantities of gravel are present throughout the soil. In a few places angular quartz fragments occur on the surface and throughout the soil. This phase of Bradley sandy loam varies more in thickness than the typical soil. Generally the surface mantle of sandy soil is deeper on the phase, ranging from 20 to 30 inches.

The gravelly phase of Bradley sandy loam occurs in close association with the typical soil. The largest areas are south of St. Lukes Church and east of Camp Store. About 20 per cent of the soil is under cultivation, but the quantity of gravel present in some places greatly interferes with cultivation. Abandoned areas are covered with second-growth pine. The areas are rolling or steep, but erosion is not excessive, owing to the great quantity of gravel present throughout the soil.

This soil is generally too gravelly for successful cultivation and can best be utilized for forest lands. The forest trees consist mostly of oak, pine, hickory, and some beech, black gum, dogwood, and cedar. The soil material is considered very valuable for road-building purposes, and quantities have been used locally with much success.

CHESTERFIELD SANDY LOAM

In virgin areas, the 2-inch or 3-inch surface layer of Chesterfield sandy loam consists of gray loamy sand or loose sandy loam. This is underlain by pale grayish-yellow loamy sand or sandy loam which continues to a depth varying from 10 to 20 inches. Underlying this there is in some places another layer which consists of yellow sandy loam and extends to a depth ranging from 18 to 24 inches. The subsoil is yellow, rather heavy but friable clay to a depth between 24 and 30 inches and is underlain by yellowish-red or mottled red and yellow friable clay. The mottled yellow and red, friable disintegrated and partly decomposed parent rock occurs below a depth varying

from 30 to 60 or more inches. This rock consists of gneiss, granite, and schist. A small quantity of rounded quartz gravel or coarse sand is present in the soil in a few places. The Chesterfield soils, like the Bradley, represent an overlapping of the coastal plain on the residual piedmont plateau, and are a soil condition rather than distinct soil types. In the Chesterfield soils, the subsoil belongs to the Durham and Appling series, and the surface soil belongs to the Norfolk.

Chesterfield sandy loam occurs along the northern border of the county near the Virginia State line from Concord Church westward to Bethany School and Gum Forks. The largest areas are along Beaverpond Creek and Jacks Swamp. The soil occupies smooth ridges and slopes to stream courses. Drainage is well established.

This is not an important agricultural soil in Northampton County. Probably less than 20 per cent of it has been brought under cultivation. The greater part of it is recently cut-over land, or is partly covered with a poor growth of pine and oak. Corn is the most generally grown crop. Some of the timbered areas are utilized as pasture land.

The current selling price of Chesterfield sandy loam ranges from $5 to $60 an acre, depending on the location and character of the timber or improvements.

ALTAVISTA FINE SANDY LOAM

The 1-inch or 2-inch surface layer of Altavista fine sandy loam is light-gray fine sandy loam. It is underlain by grayish-yellow heavy fine sandy loam which continues to a depth between 6 and 9 inches. The upper part of the subsoil is yellow, heavy, but moderately friable clay or silty clay containing a small quantity of fine mica particles. This grades, at a depth ranging from 18 to 26 inches, into ocherous-yellow, mottled with light-gray, heavy, sticky very fine sandy clay. In cultivated areas the surface soil is very light-gray fine sandy loam to a depth varying from 4 to 8 inches.

Altavista fine sandy loam, as mapped in this county, includes a few small areas of Wickham fine sandy loam, Roanoke very fine sandy loam, and Wickham loam. These areas were too small to be shown separately on the soil map.

The most important areas of Altavista fine sandy loam occur along Meherrin River at Rogers, east of Margaretsville. Several small areas are mapped along both Meherrin and Roanoke Rivers. The soil mainly occupies flat or gently undulating positions, somewhat lower than the associated Wickham soils. Some of the smaller areas occur in basinlike depressions. Owing to the lack of surface relief and to the heavy texture and compact structure of the surface soil and subsoil, natural drainage is not so well established as on the Wickham soils.

On account of its comparatively small extent this is not an important agricultural soil in Northampton County. Probably 40 per cent of it is cultivated. A rather large part of the uncultivated areas is cut-over land. The timber trees include pine, oak, sweet gum, hickory, elm, and other hardwoods.

Corn, cotton, and peanuts are grown, and some small areas are devoted to rye, oats, and crimson clover. Cotton yields from one-fourth to one-half bale to the acre, peanuts from 600 to 1,200

pounds, and corn from 10 to 25 bushels. Cotton land is given from 600 to 800 pounds to the acre of a 4–8–4 fertilizer, corn from 200 to 400 pounds of a 2–8–2 grade, and peanuts from 500 to 1,000 pounds of lime and a top-dressing of gypsum. Practically all of the farming on this soil is done by colored tenants.

A large part of this soil requires ditching before it can be successfully cultivated. Along Meherrin River the soil is subject to overflow during very high water. On account of the rather poor drainage and compact consistence, the soil has a tendency to pack and harden if it is cultivated too soon after rains. It would be greatly benefited by the addition of vegetable matter, by deeper plowing, and by liberal applications of lime.

ALTAVISTA FINE SAND

The surface soil of Altavista fine sand is gray or light-gray loose fine sand to a depth between 8 and 12 inches, where it grades into yellow, loose, incoherent fine sand which continues to a depth of 50 or more inches. The underlying material is mottled yellow and light-gray fine sandy clay. In wooded areas the surface 1-inch or 2-inch layer contains very little vegetable matter and is darker gray in color.

This soil occupies islandlike mounds, low ridges, or hummocky areas on the terraces along Meherrin River, mainly near Princeton. These areas are small and have all been under cultivation at one time or another. At present the greater part of the soil is grown up in old-field pine. Corn and cotton are grown on a few areas, but yields are low. This is one of the least important soils in the county. It should remain in forest.

ROANOKE VERY FINE SANDY LOAM

Roanoke very fine sandy loam has a 1-inch or 2-inch surface layer of gray, heavy, very fine sandy loam. This is underlain, to a depth of 6 or 8 inches, by light-gray heavy very fine sandy loam faintly mottled with yellow. The subsoil, between depths of about 10 and 40 inches, generally consists of an upper layer, from 8 to 12 inches thick, of drab-gray, tough, plastic clay, mottled with brownish yellow, and a lower layer of mottled gray and yellowish-brown, heavy, tough, impervious, plastic clay. In a few places red mottles appear in the lower part of the subsoil. Generally a thin layer represents the gradation from surface soil to subsoil. This commonly consists of yellowish-gray, heavy, very fine sandy clay, which occurs at a depth varying from 8 to 12 inches below the surface. Underlying the subsoil is mottled drab-gray and rust-brown heavy, compact silty clay or clayey material which is somewhat crumbly when dry. In cultivated areas the surface soil is generally yellowish-gray or brownish-gray very fine sandy loam, the color varying with the quantity and character of the organic matter and the depth of plowing. A few areas show a mottled drab and rust-brown color in the surface soil. The subsoil, on exposure and drying, becomes hard, cracks, and takes on a dingy or rust-brown color. In places it has an olive-brown color.

Roanoke very fine sandy loam occurs in small areas on the terraces of Roanoke River and in small areas along the Meherrin River. The

largest areas are mapped around Roanoke Chapel and west of Bryantown. The soil occupies low, flat, or very slightly undulating depressions in the terraces and generally lies adjacent to the upland. Where the soil approaches drainage channels there is generally a rather abrupt but very short slope. Owing to the lack of relief and the imperviousness of the subsoil, this is one of the more poorly drained soils in the county, and water remains on the surface for some time after rains.

Only a very small part of the Roanoke very fine sandy loam is under cultivation. Most of it is cut-over land. The remainder is forested with white oak, water oak, willow oak, post oak, tupelo gum, sweet gum, maple, ash, elm, and hickory. The agricultural value of the soil is low, and it is regarded as best adapted to forestry and pasturage purposes.

Good drainage is difficult to obtain over practically all areas. Cotton and corn are grown on a few small fields near Roanoke Chapel and along Meherrin River. The yields are lower than on the Wickham soils, and in wet seasons the crops have a tendency to drown out. Some of the cut-over areas are utilized as pastures.

ROANOKE SILT LOAM

The surface layer of Roanoke silt loam is gray or very dark-gray silt loam, to a depth varying from 2 to 4 inches. This grades into brownish-gray heavy silt loam which continues to a depth of 8 or 10 inches. The subsoil is drab-gray, plastic, impervious, silty clay mottled with brown or brownish yellow. It grades, at a depth of 20 or 30 inches, into mottled gray and brown, somewhat loose and friable sandy clay material.

This soil occurs in a few spots in the lowest depressions on the terraces along Roanoke and Meherrin Rivers. It is more poorly drained than any soil in the county, except the first-bottom soils. Most of it has been cleared but abandoned, and it is now grown up in coarse grasses, reeds, and alder bushes. Locally such areas are used as pastures for cattle and hogs. The land should be used for pasturage or forestry purposes.

KALMIA FINE SANDY LOAM

Kalmia fine sandy loam is not a uniform soil, there being considerable variation in the surface soil and subsoil. In typical areas, the 1-inch or 2-inch surface layer is light-gray fine sandy loam. This is underlain, to a depth ranging from 8 to 12 inches, by pale grayish-yellow fine sandy loam. The subsoil is yellow, friable, fine sandy clay underlain, at a depth between 28 and 35 inches, by mottled light-gray and brownish-yellow, rather heavy, slightly sticky fine sandy clay. Locally the subsoil may lie within 2 or 3 inches of the surface, or it may be from 18 to 24 inches below the surface. In some places the surface soil is dark-gray very fine sandy loam to a depth of 4 or 5 inches.

Kalmia fine sandy loam occurs on the terraces or second bottoms along Kirbys and Potecasi Creeks. These terraces consist of coastal-plain material which has been redeposited by the streams. The largest areas mapped are north of Worrell Mill. The surface ranges from nearly level to gently undulating, with a somewhat pronounced

drop to the swamp or first-bottom areas. The general elevation of the soil above the stream ranges from a few feet to about 20 feet. The terraces on which it occurs lie well above normal high-water or flood stage, and their position tends to give the soil good drainage.

Kalmia fine sandy loam is of small extent and is of comparatively little importance in the agriculture of the county. The greater part of it is wooded, the growth consisting largely of pine, beech, birch, various oaks, hickory, and scattered dogwood and holly. Corn, cotton, peanuts, garden vegetables, potatoes, fruits, and other crops common to the county are grown on the cultivated areas north of Worrell Mill. As a rule, crop yields average about the same as on the near-by upland soils belonging to the Norfolk and Ruston series. Cotton averages about one-half bale to the acre, corn from 20 to 30 bushels, and peanuts from 1,000 to 2,400 pounds. This soil is managed and fertilized in about the same manner as Norfolk fine sandy loam.

Table 5 gives the results of mechanical analyses of samples of the surface soil, subsurface soil, and two layers of the subsoil of Kalmia fine sandy loam.

TABLE 5.—*Mechanical analysis of Kalmia fine sandy loam*

Number	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
2367127	Surface soil, 0 to 2 inches	0.2	1.3	1.2	30.8	43.4	17.9	5.2
2367128	Subsurface soil, 2 to 10 inches	.2	.6	.6	32.3	40.7	21.6	4.2
2367129	Subsoil, 10 to 34 inches	.1	.3	.4	20.9	33.6	21.5	23.4
2367130	Subsoil, 34 to 52 inches	.0	.9	.7	5.1	28.1	37.4	28.2

KALMIA FINE SAND

The surface layer of Kalmia fine sand consists of light-gray fine sand from 2 to 4 inches thick. This is underlain, to a depth of 10 or 15 inches, by pale-yellow, loose, mellow fine sand. The subsoil is yellow or grayish-yellow loose, incoherent fine sand which grades, at varying depths, into mottled light-gray and yellow sticky fine sandy material. There is considerable variation in the color of the subsoil and the underlying material.

Only a few small areas of this soil occur along Kirbys Creek, the largest area being in the vicinity of the mill about 1 mile south of Pendleton. Practically all of the soil has been cleared but has largely been abandoned and is now grown up in small old-field pine. Small spots are used for the production of corn. Kalmia fine sand occupies the same general position of Kalmia fine sandy loam. It has a low agricultural value and should remain in forest.

MYATT FINE SANDY LOAM

The surface soil of Myatt fine sandy loam is dark-gray or almost black fine sandy loam to a depth varying from 3 to 7 inches, where it is underlain by light-gray or almost white fine sandy loam or heavy fine sandy loam, slightly mottled in places with yellow. The subsoil is mottled yellow and light-gray, heavy, plastic fine sandy clay. In a few places the surface soil may be light gray. The soil is found in small areas along Kirbys and Potecasi Creeks. It is reworked and

redeposited coastal-plain material and occupies low, poorly drained areas on the terraces.

None of this soil is cultivated, and the greater part is cut-over land. The forest growth consists principally of sweet gum, black gum, tupelo gum, shortleaf pine, white and post oak, holly, and an undergrowth of gall berry bushes and briers. When drained and limed, this soil is used in other counties for the production of corn and oats. It is best suited to forestry in Northampton County.

CONGAREE FINE SANDY LOAM

Congaree fine sandy loam consists of brownish or reddish-brown material, from 10 to 14 inches thick, underlain, to a depth of 50 or more inches, by light reddish-brown or yellowish-brown fine sandy clay or heavy fine sandy loam.

This soil occurs on a few islands in Roanoke River along the fall line in the western part of the county. Two small areas are mapped along lower Roanoke River, and two small areas are along Meherrin River near the Virginia State line. The greater part of the soil is planted to corn. Yields in normal seasons are about 25 or 30 bushels to the acre. The soil is subject to overflow during periods of high water. On account of its very small extent, it is not important agriculturally, although it is an excellent soil for growing watermelons.

CONGAREE SILTY CLAY LOAM

Congaree silty clay loam consists of reddish-brown silty clay loam which continues to a depth ranging from 6 to 20 feet with no appreciable change in color, texture, or structure. This is the most uniform soil in the county.

Congaree silty clay loam occurs in the first bottoms of Roanoke and Meherrin Rivers and in one small area on Beaverpond Creek. The surface is flat or level, with a very gentle slope toward the stream in the direction of the flow. Along Meherrin River the soil lies only a few feet above the normal water level and is inundated after practically every rain. Roanoke River has a much deeper channel, and the first bottoms are not overflowed except during periods of high water. In a normal season Roanoke River does not overflow during the summer months. All of this soil, however, requires artificial drainage before it can be successfully used for agriculture. West of Bryantown a large area was reclaimed by slave labor. Canals were dug and high levees built. Floodgates prevented water from the river entering during periods of high water. Years ago in Occoneechee Neck another area was similarly reclaimed by State-prison labor. Both of these areas have largely been abandoned and are now covered with a dense growth of young hardwoods. The levees and canals can not be maintained unless labor may be had practically free, as the cost of such maintenance more than counterbalances the value of the crops obtained. No attempt has been made to reclaim any first-bottom soils along Meherrin River.

Congaree silty clay loam is inherently the most productive soil in the county, but on account of its susceptibility to overflow only a very small part of it is under cultivation. Original forest consists of mixed hardwoods, principally maple, ash, elm, water willow, white

oak, red oak, and post oak, tupelo gum, sweet gum, and black gum, poplar, sycamore, holly, and buckeye. Some scattered loblolly pine and cypress are also found. At one time all the soil was covered with a dense forest of valuable merchantable timber.

This soil is considered especially valuable for corn, which is the only crop grown. Yields range from 20 to 75 bushels to the acre, with an average of 40 bushels in a normal season. No fertilizer is used. Wild grasses grow luxuriantly on the cleared areas that are not cultivated, and some of these areas are utilized as pastures.

On account of the heaviness and compactness of Congaree silty clay loam, strong work animals and heavy plows are necessary in preparing the seed bed. Good breaking can not be done unless the soil is somewhat moist, and it is necessary to go over the field several times with disk harrows to break up the clods. In laying off rows it is the general practice to throw up ridges several inches high, on which the corn is planted. Generally two or three cultivations are given the crop.

The value of Congaree silty clay loam ranges from a few dollars an acre to $50 or more.

MEADOW

Meadow represents a classification of material which is so irregular in texture and structure and so variable in color that no definite soil type distinctions can be made. The material ranges in texture from clay and silt to fine sandy loam and sand and in color from black to red and light gray.

Narrow strips of this material occur along Roanoke River and some of the creeks in the western and northern parts of the county. Meadow occupies low, flat areas in the first bottoms and is subject to overflow with the slightest rise above normal water level. None of the meadow is cultivated. It is best suited to use for forestry and natural pasture for grazing cattle during the summer and early fall.

SWAMP

Swamp includes stream-bottom areas in which the soil material varies so much in texture, structure, and color that no definite soil type separation can be made. The surface material ranges in texture from sand through fine sand and loam to silt loam or clay loam and in color from light gray through dark gray and brown to black. The subsoil may be sand, fine sandy clay, silty clay, or clay, with ranges in color from gray through mottled gray and yellow to mottled gray and brown. In many places the soil is black, mucky loam 30 or more inches thick. On the smaller streams much of the swamp is grayish fine sand with yellow and gray mottles in the lower part.

Swamp occurs in the first bottoms along practically all the streams of the county east of the piedmont plateau. New material is continually being added by the washing in of soil material from adjoining slopes, by high water, and by decaying vegetable matter. Swamp is more poorly drained than meadow and remains saturated or covered with water the greater part of the year.

Swamp is not cultivated. It supports a fair or good growth of tupelo gum, water oak, and cypress, together with scattered hardwoods. The selling price depends largely on the quantity and quality of the timber growth.

SUMMARY

Northampton County is in the northeastern part of North Carolina along the Virginia State line. The relief ranges from level in the southern part, through rolling in the northern, to hilly in the extreme western part. Drainage of the southern part is poor; that of the northern part is generally good; and that of the extreme western part is very good or excessive.

Railway facilities are very good. The State highways are maintained in an excellent condition, but the average county roads are poor. The county is well settled, there being no extensive uninhabited areas. There are no large towns.

Cotton and peanuts are the cash crops, and corn is the subsistence crop. Cotton is produced on nearly all farms in the county and peanuts and corn on most farms. Only a very little hay and other feed are produced. Norfolk and Suffolk are the cotton and peanut markets.

There are a large number of soil types in the county, owing to the great differences in relief and also to the underlying geologic formations from which the soils were derived. The soils range from the residual clays of the piedmont plateau through the friable fine sandy loams of the higher coastal plain to the finer-textured and heavier soils of the flatwoods and river terraces. Thirty-six soil types, six phases, and two miscellaneous classes of soil material, meadow and swamp, were mapped.

The principal agricultural soils are Norfolk fine sandy loam, Marlboro fine sandy loam, Marlboro very fine sandy loam, Orangeburg sandy loam, Greenville fine sandy loam, Ruston fine sandy loam, Cuthbert fine sandy loam, Dunbar very fine sandy loam, Lufkin very fine sandy loam, and Wickham loam.

Practically all the soils of the county are deficient in nitrogen and organic matter. Potash and superphosphate (acid phosphate), although less essential than nitrogen, must be supplied. Organic matter can best be supplied by growing and turning under green-manure crops, especially legumes.

○

[PUBLIC RESOLUTION—No. 9]

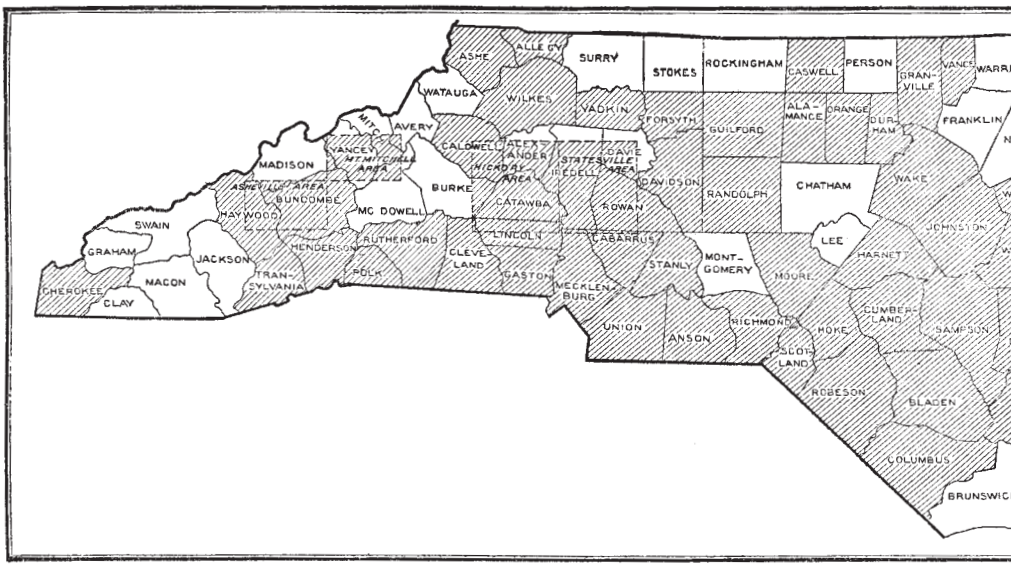
JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided,* That in addition to the number of copies above provided for there shall be printed, as soon as the manuscript can be prepared, with the necessary maps and illustrations to accompany it, a report on each area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved, March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils, and on July 1, 1927, the Bureau of Soils became a unit of the Bureau of Chemistry and Soils.]



Areas surveyed in North Carolina, shown by shading

Accessibility Statement

This document is not accessible by screen-reader software. The U.S. Department of Agriculture is committed to making its electronic and information technologies accessible to individuals with disabilities by meeting or exceeding the requirements of Section 508 of the Rehabilitation Act (29 U.S.C. 794d), as amended in 1998. Section 508 is a federal law that requires agencies to provide individuals with disabilities equal access to electronic information and data comparable to those who do not have disabilities, unless an undue burden would be imposed on the agency. The Section 508 standards are the technical requirements and criteria that are used to measure conformance within this law. More information on Section 508 and the technical standards can be found at www.section508.gov.

If you require assistance or wish to report an issue related to the accessibility of any content on this website, please email Section508@oc.usda.gov. If applicable, please include the web address or URL and the specific problems you have encountered. You may also contact a representative from the USDA Section 508 Coordination Team.

Nondiscrimination Statement

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the

Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at http://www.ascr.usda.gov/complaint_filing_cust.html and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by:

(1) mail: U.S. Department of Agriculture
Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, SW
Washington, D.C. 20250-9410;

(2) fax: (202) 690-7442; or

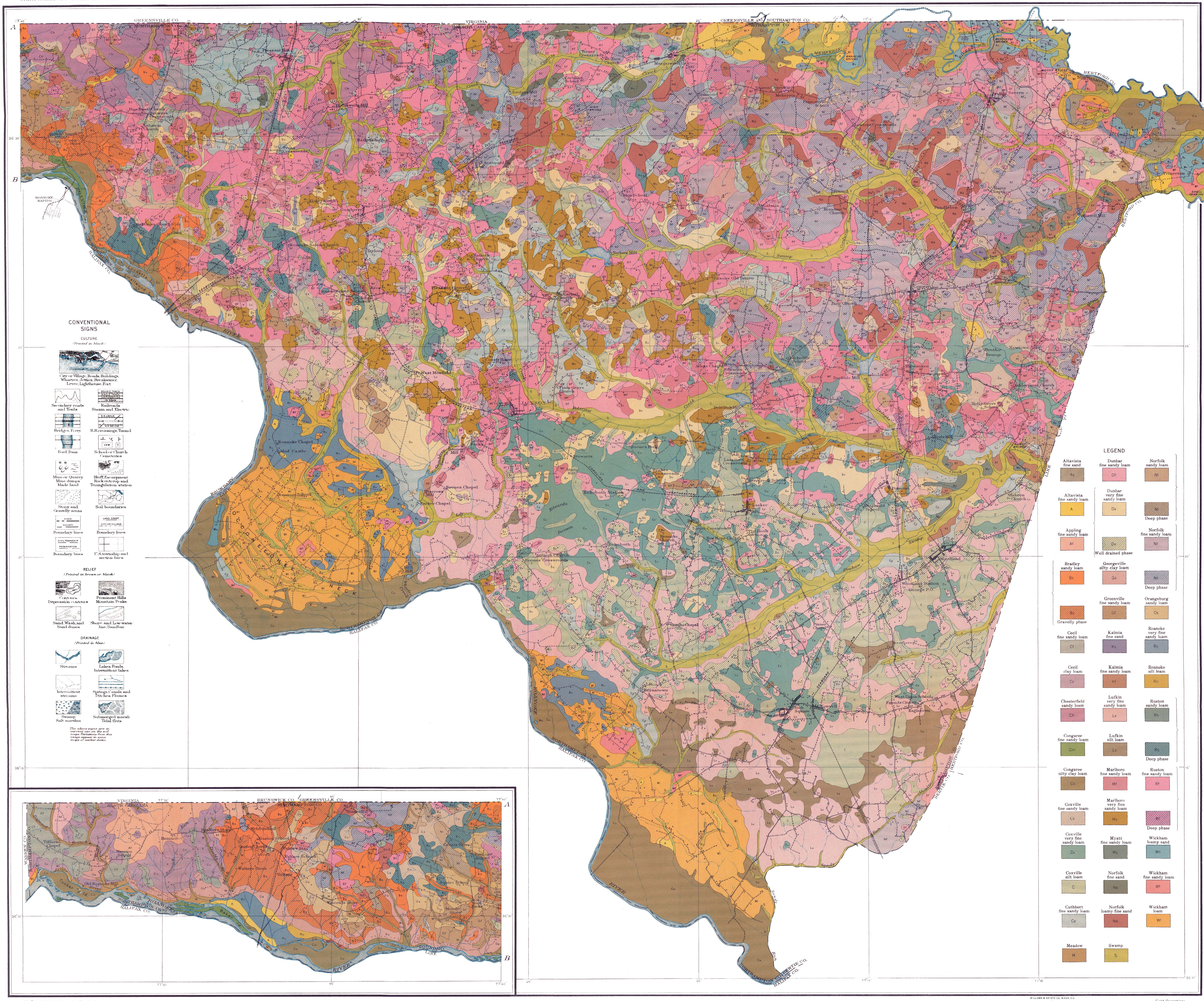
(3) email: program.intake@usda.gov.

USDA is an equal opportunity provider, employer, and lender.

U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF CHEMISTRY AND SOILS
HENRY G. KNIGHT, CHIEF
A. G. Mc CALL, CHIEF, SOIL INVESTIGATIONS
CURTIS F. MARBUT, IN CHARGE SOIL SURVEY

SOIL MAP
NORTHAMPTON COUNTY
NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF AGRICULTURE
W. A. GRAHAM, COMMISSIONER
NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION
R. Y. WINTERS, DIRECTOR
C. B. WILLIAMS, IN CHARGE OF SOIL SURVEY



W. Edward Hearn, Inspector, District 2.
Soils surveyed by W. D. Lee, U. S. Department of Agriculture, in charge, and S. F. Davidson, North Carolina Department of Agriculture and North Carolina Agricultural Experiment Station.

Scale 1 inch - 1 mile

WILLIAMS & HEINTZ CO. WASH. D.C.

Field Operations
Bureau of Soils
1925